

TROWELING DEVICE AND TROWELING ROBOT

CROSS REFERENCE TO RELATED APPLICATION

[0001] This application claims priority to Chinese Patent Application No. 202010274770.0, entitled “troweling device and troweling robot”, filed on April 9, 2020, the content of which is incorporated herein by reference in its entirety.

TECHNICAL FIELD

[0002] The present disclosure relates to the technical field of construction machinery, in particular to a troweling device and a troweling robot.

BACKGROUND

[0003] In the field of construction, troweling a construction surface is one of the indispensable processes. The conventional troweling device travels via a roller, which has functions of slurry rolling and extracting, but for a working surface of concrete that is in an initial setting stage after leveling, the slurry extracting effect is poor, and the floating slurry is insufficient, resulting in that the quality of subsequent troweling cannot be guaranteed.

[0004] Technical problems of how to improve the slurry extracting effect and ensure the quality of subsequent troweling are required to be solved by those skilled in the art.

SUMMARY

[0005] Accordingly, an objective of the present disclosure is to provide a troweling device and a troweling robot, which can improve the slurry extracting effect and ensure the construction quality of subsequent troweling.

[0006] To achieve the above objective, the present disclosure adopts the following

technical solutions.

[0007] A troweling device, as a preferred solution, includes:

[0008] a main bod;

[0009] a roller traveling mechanism mounted on the main body and capable of travelling along a construction surface; and

[0010] a vibrating slurry extracting mechanism mounted on the main body. The vibrating slurry extracting mechanism is located behind the roller traveling mechanism in a traveling direction of the troweling device. The vibrating slurry extracting mechanism is capable of abutting against the construction surface, and performing slurry extracting on slurry on the construction surface through vibration.

[0011] As a preferred solution, the vibrating slurry extracting mechanism includes:

[0012] a first frame connected to the main body;

[0013] a vibrating assembly slidably connected to the first frame in a vertical direction. The vibrating assembly includes a vibrating roller and a vibration motor configured to drive the vibrating roller to vibrate.

[0014] As a preferred solution, the vibrating slurry extracting mechanism further includes:

[0015] a first linear driving member mounted on the first frame. An output end of the first linear driving member is connected to the vibrating assembly in a transmission manner. The first linear driving member is capable of driving the vibrating assembly to move in the vertical direction.

[0016] As a preferred solution, the vibrating assembly further includes:

[0017] a vibration beam connected to the output end of the first linear driving member. The vibration motor is mounted on the vibration beam. The vibrating roller is provided below the vibration beam. The vibrating roller is rotatably connected to the vibration beam and is capable of rolling on the construction surface.

[0018] As a preferred solution, the vibrating slurry extracting mechanism further includes:

[0019] a guide shaft provided in the vertical direction, an upper end of the guide shaft being connected to the output end of the first linear driving member in a transmission

manner, and a lower end of the guide shaft being connected to the vibrating assembly; and

[0020] a linear bearing, wherein the guide shaft is vertically slidably connected to the main body through the linear bearing.

[0021] As a preferred solution, a vibration isolator is further provided between the guide shaft and the vibrating assembly. The vibration isolator is configured to prevent the vibrating assembly from transmitting the vibration to the main body along the guide shaft.

[0022] As a preferred solution, the troweling device further includes:

[0023] a slurry combing spatula mechanism mounted on the main body and provided behind the vibrating slurry extracting mechanism in the traveling direction of the troweling device. The slurry combing spatula mechanism includes:

[0024] a slurry combing plate, including a comb tooth structure configured to smooth raised slurry on the construction surface; and

[0025] a troweling plate provided behind the slurry combing plate and capable of abutting against and troweling the construction surface. A lowest point of the slurry combing plate is located at a position higher than a position where a lowest point of the troweling plate is located.

[0026] As a preferred solution, the slurry combing plate includes, sequentially provided along the traveling direction of the troweling device:

[0027] a first slurry guiding portion having a height that gradually decreases from front to back;

[0028] a first main plate portion having a front end that is connected to a rear end of the first slurry guiding portion, and the first main plate portion being provided as a flat and straight plate structure; and

[0029] a comb tooth portion having a height that gradually decreases from front to back. A front end of the comb tooth portion is connected to a rear end of the first main plate portion, and a rear end of the comb tooth portion is provided with a comb tooth structure.

[0030] As a preferred solution, the slurry combing spatula mechanism further includes:

[0031] a lifting assembly mounted on the main body. An output end of the lifting assembly is connected to both the slurry combing plate and the troweling plate, and is

capable of driving the slurry combing plate and the troweling plate to move up and down synchronously.

[0032] A troweling robot is further provided, which includes the above-mentioned troweling device.

[0033] The beneficial effects of the present disclosure are as follows.

[0034] The troweling device according to the present disclosure includes a roller traveling mechanism and a vibrating slurry extracting mechanism. When the troweling device is working, the roller traveling mechanism drives the whole troweling device to move on the construction surface. On the one hand, the roller traveling mechanism performs preliminary slurry rolling and extracting on the slurry on the construction surface; on the other hand, the vibrating slurry extracting mechanism abuts against the construction surface under gravity, and vibrates on the construction surface so as to perform secondary slurry extracting on the slurry on the construction surface. The troweling device according to the present disclosure extracts the slurry twice in a working stroke, thereby ensuring sufficient floating slurry, improving the slurry extracting effect, and guaranteeing the quality of subsequent troweling.

BRIEF DESCRIPTION OF THE DRAWINGS

[0035] In order to illustrate the technical solutions in the embodiments of the present disclosure more clearly, the accompanying drawings used in the description of the embodiments of the present disclosure will be briefly introduced below. Apparently, the drawings in the following description are merely some embodiments of the present disclosure. For those of ordinary skill in the art, without creative work, other drawings can be derived from the content of the embodiments of the present disclosure and these drawings.

[0036] FIG. 1 is a front view of a troweling device according to an embodiment of the present disclosure.

[0037] FIG. 2 is a schematic structural view of a troweling device according to an embodiment of the present disclosure.

- [0038]** FIG. 3 is an enlarged schematic view of an area A in FIG. 2.
- [0039]** FIG. 4 is a schematic structural view of a vibrating slurry extracting mechanism according to an embodiment of the present disclosure.
- [0040]** FIG. 5 is a front view of a vibrating slurry extracting mechanism according to an embodiment of the present disclosure.
- [0041]** FIG. 6 is a partial schematic view of a troweling device according to an embodiment of the present disclosure.
- [0042]** FIG. 7 is a schematic structural view of a slurry combing plate according to an embodiment of the present disclosure.
- [0043]** Reference numerals:
- [0044]** 1. main body;
- [0045]** 21. front roller; 22. rear roller;
- [0046]** 3. vibrating slurry extracting mechanism; 301. first frame; 302. vibrating roller; 303. vibration motor; 304. vibration beam; 305. mounting plate; 306. first linear driving member; 307. guide shaft; 308. linear bearing; 309. vibration isolator; 310. fixing plate; 311. beam;
- [0047]** 4. slurry combing spatula mechanism; 401. second frame; 402. slurry combing plate; 4021. first slurry guiding portion; 4022. first main plate portion; 4023. comb tooth portion; 403. troweling plate; 4031. second slurry guiding portion; 4032. second main plate portion; 404. mounting frame; 405. wedge block; 406. second linear driving member; 407. sliding rail; 408. slider; 409. snap-fit; 410. movable plate;
- [0048]** 5. auxiliary traveling mechanism;
- [0049]** 6. laser receiver.

DETAILED DESCRIPTION OF THE EMBODIMENTS

[0050] In order to make the technical problems solved, the technical solutions adopted and the technical effects achieved by the present disclosure clearer, the technical solutions of the embodiments of the present disclosure will be described in further detail below in conjunction with the accompanying drawings. Apparently, the described embodiments are

merely a part of the embodiments of the present disclosure, rather than all the embodiments. Based on the embodiments of the present disclosure, all other embodiments obtained by those skilled in the art without creative work shall fall within the protection scope of the present disclosure.

[0051] As shown in FIGS. 1 to 7, the present embodiment provides a troweling device for troweling a construction surface. The troweling device has a prominent troweling effect, especially on a working surface of concrete in an initial setting stage. The troweling device includes a main body 1, a roller traveling mechanism and a vibrating slurry extracting mechanism 3. The roller traveling mechanism is mounted on the main body 1. The vibrating slurry extracting mechanism 3 is mounted on the main body 1, and is located behind the roller traveling mechanism in a traveling direction of the troweling device. The vibrating slurry extracting mechanism 3 includes a first frame 301 and a vibrating assembly. The first frame 301 is connected to the main body 1. The vibrating assembly is slidably connected to the first frame 301 in a vertical direction. The vibrating assembly includes a vibrating roller 302 and a vibration motor 303 configured to drive the vibrating roller 302 to vibrate. When the troweling device is working, the roller traveling mechanism drives the whole troweling device to move on the construction surface. On the one hand, the roller traveling mechanism performs preliminary slurry rolling and extracting on slurry on the construction surface; on the other hand, the vibrating roller 302 of the vibrating slurry extracting mechanism 3 abuts against the construction surface under gravity, and the vibration motor 303 drives the vibrating roller 302 to vibrate on the construction surface so as to perform secondary slurry extracting on the slurry on the construction surface. The troweling device according to this embodiment extracts the slurry twice successively in a working stroke, thereby ensuring sufficient floating slurry, improving the slurry extracting effect, and guaranteeing the quality of subsequent troweling.

[0052] Further, the vibrating assembly further includes a vibration beam 304. The vibration motor 303 is mounted at a center of the vibration beam 304 in its extending direction through a mounting plate 305. Both ends of the vibration beam 304 are rotatably connected to and correspond to both ends of the vibrating roller 302 respectively. When the troweling device travels for working, the vibrating roller 302 rolls on the construction

surface, while the vibration motor 303 mounted on the vibration beam 304 drives itself to vibrate, thus driving the vibrating roller 302 to vibrate together to vibrate the slurry on the construction surface, thereby achieving the slurry extracting effect.

[0053] Certainly, the vibrating roller 302 can also abut against the construction surface driven by a driving member. Specifically, the vibrating slurry extracting mechanism 3 further includes a first linear driving member 306. The first linear driving member 306 is mounted on the first frame 301. An output end of the first linear driving member 306 is connected to the vibration beam 304 in a transmission manner. When the troweling device is in a non-working state or needs to pass over obstacles, the first linear driving member 306 retracts in the vertical direction, driving the vibrating assembly to move vertically upwards. When the troweling device is required to be switched to a working state, the first linear driving member 306 extends in the vertical direction, driving the vibrating assembly to move vertically downwards and abut against the construction surface.

[0054] Preferably, the first linear driving member 306 adopts an electric push rod. Therefore, the first linear driving member 306 not only has a compact structure, but also has high precision in movement and good self-locking performance. Certainly, in other embodiments, the first linear driving member 306 may also adopt other linear driving members such as air cylinders and oil cylinders and the like.

[0055] Further, the vibrating slurry extracting mechanism 3 further includes a guide shaft 307 and a linear bearing 308. The guide shaft 307 is provided in the vertical direction, an upper end of which is connected to the output end of the first linear driving member 306 in a transmission manner, and a lower end of which is connected to the vibration beam 304. The linear bearing 308 is fixedly connected to the main body 1. The guide shaft 307 extends through the linear bearing 308. The guide shaft 307 and the linear bearing 308 together provide reliable guidance to move the vibrating assembly up and down.

[0056] Preferably, a vibration isolator 309 is provided between the guide shaft 307 and the vibration beam 304. The vibration isolator 309 is mounted on the vibration beam 304 and connected to the output end of the first linear driving member 306 through a fixing plate 310, to prevent the vibrating assembly from transmitting vibration to the main body 1 along the guide shaft 307. When the vibrating slurry extracting mechanism 3 is working,

the vibration isolator 309 can reduce an impact of the vibration generated by the vibration motor 303 on other components of the troweling device except the vibrating assembly, ensuring the overall construction quality.

[0057] Further, two guide shafts 307 are provided in the vibrating slurry extracting mechanism 3. Correspondingly, two linear bearings 308 are provided to match the guide shafts 307 in a one-to-one correspondence. A beam 311 is further horizontally provided between the first linear driving member 306 and the guide shaft 307. A middle portion of the beam 311 is connected to the output end of the first linear driving member 306. Both ends of the beam 311 are respectively connected to the two guide shafts 307. Specifically, the two sets of guide shafts 307 and linear bearings 308 jointly guide the vibrating assembly to move up and down, such that the moving up and down of the vibrating assembly is more stable, and rotation of the vibrating assembly in a horizontal direction with respect to the first frame 301 is restricted.

[0058] Furthermore, the troweling device further includes a combing spatula mechanism 4, which is mounted on the main body 1, and is provided behind the vibrating slurry extracting mechanism 3 in the traveling direction of the troweling device. The combing spatula mechanism 4 includes a slurry combing plate 402 and a troweling plate 403. The slurry combing plate 402 is provided with a comb tooth structure extending in a horizontal direction perpendicular to the traveling direction of the troweling device. The troweling plate 403 is provided behind the slurry combing plate 402. A lowest point of the slurry combing plate 402 is located at a position higher than a position where a lowest point of the troweling plate 403 is located. Specifically, after the roller traveling mechanism and the vibrating slurry extracting mechanism 3 have successively performed slurry extracting on the construction surface twice, the slurry combing plate 402 firstly passes through the construction surface subjected to the slurry extracting, and thus the comb tooth structure on the slurry combing plate 402 can effectively smooth the raised slurry on the construction surface. Following closely, the troweling plate 403 passes through the construction surface smoothed by the slurry combing plate 402. Since the height of the lowest point of the troweling plate 403 is lower than that of the slurry combing board 402 and the troweling plate 403 abuts against the construction surface, the troweling

plate 403 can effectively fill relatively depressed areas of the construction surface with the floating slurry on the construction surface. The slurry combing plate 402 and the troweling plate 403 cooperatively complete the work of removing the heights and filling in the depressions on the construction surface, improving the flatness of the construction surface and ensuring the construction accuracy.

[0059] Further, the slurry combing plate 402 includes a first slurry guiding portion 4021, a first main plate portion 4022, and a comb tooth portion 4023 that are sequentially connected end to end, from front to back along the traveling direction of the troweling device. A height of the first slurry guiding portion 4021 gradually decreases from front to back. The first main plate portion 4022 is provided as a flat and straight plate structure. A height of the comb tooth portion 4023 gradually decreases from front to back. A rear end of the comb tooth portion 4023 is provided with a comb tooth structure extending in the horizontal direction perpendicular to the traveling direction of the troweling device. Specifically, the first slurry guiding portion 4021 and the comb tooth portion 4023 can be provided as an arc-shaped plate structure with a front end tilted upward, or can be provided as a flat plate structure which has an elevation angle with the traveling direction of the troweling device greater than zero. Through such configuration, the floating slurry on the construction surface is preliminary smoothed along a bottom surface contour of the first slurry guiding portion 4021 by the first main plate portion 4022 and the comb tooth portion 4023, reducing the floating slurry scraped to an upper surface of the slurry combing plate 402. In addition, it can further reduce a height of the floating slurry on the construction surface after being scraped by the comb tooth portion 4023, such that the floating slurry is easier to be covered by the troweling plate 403, thus reducing the floating slurry that is scraped to an upper surface of the troweling plate 403.

[0060] Further, the troweling plate 403 includes a second slurry guiding portion 4031 and a second main plate portion 4032 that are sequentially connected end to end, from front to back along the traveling direction of the troweling device. The second slurry guiding portion 4031 gradually decreases in height from front to back. The second main plate portion 4032 is provided as a flat and straight plate structure. Specifically, the second slurry guiding portion 4031 can be provided as an arc-shaped plate structure with a front

end tilted upward, or can be provided as a flat plate structure which has an elevation angle with the traveling direction of the troweling device greater than zero. Through such configuration, the floating slurry on the construction surface is troweled along a bottom surface contour of the second slurry guiding portion 4031 by the second main plate portion 4032, reducing the floating slurry scraped to an upper surface of the troweling plate 403, ensuring quality of filling the relatively depressed areas of the construction surface with the slurry.

[0061] Preferably, the slurry combing plate 402 and the troweling plate 403 are both connected to the mounting frame 404 side by side by a snap-fit 409, resulting in a simple and compact structure and easy manipulation.

[0062] Furthermore, the slurry combing spatula mechanism 4 further includes a lifting assembly, which is mounted on the main body 1 through the first frame 301. The lifting assembly is connected to the mounting frame 404. Specifically, the lifting assembly includes a second frame 401 and a second linear driving member 406. The second frame 401 is fixedly connected to the first frame 301. The second linear driving member 406 is mounted on the second frame 401. The second linear driving member 406 can extend and retract in the vertical direction. An output end of the second linear driving member 406 is connected to the mounting frame 404. Driven by the second linear driving member 406, the slurry combing plate 402 and the troweling plate 403 can be moved up and down synchronously, thus adjusting a height of the troweled slurry.

[0063] Preferably, the second linear driving member 406 adopts an electric push rod. Therefore, the second linear driving member 406 is not only compact in structure, but also has high precision in movement and good self-locking performance. Certainly, in other embodiments, the second linear driving member 406 may also adopt other linear driving members such as air cylinders and oil cylinders.

[0064] Further, a wedge block 405 is further provided between the output end of the second linear driving member 406 and the mounting frame 404. An upper bottom surface of the wedge block 405 is provided in the horizontal direction, and a lower bottom surface thereof gradually increases in height along the traveling direction of the troweling device. The output end of the second linear driving member 406 is connected to the upper bottom

surface of the wedge block 405, and the mounting frame 404 is connected to the lower bottom surface of the wedge block 405, such that the slurry combing plate 402 and the troweling plate 403 as a whole has an elevation angle with the traveling direction of the troweling device greater than zero, which improves the smoothness and quality of troweling.

[0065] Preferably, the lifting assembly further includes a sliding rail 407 and a slider 408 that are slidably connected. The sliding rail 407 is provided on the second frame 401 in the vertical direction. The slider 408 is connected to the wedge block 405 through a movable plate 410. The output end of the second linear driving member 406 is also connected to the wedge block 405 through the movable plate 410. The configuration of the sliding rail 407 and the slider 408 provides a reliable guidance for the synchronous moving up and down of the slurry combing plate 402 and the troweling plate 403.

[0066] Further, the roller traveling mechanism includes a front roller 21, a rear roller 22 and a roller driving motor. Both the front roller 21 and the rear roller 22 can roll on the construction surface. The rear roller 22 is disposed at a rear end of the front roller 21 and spaced apart from it. The roller driving motor is connected to at least one of the front roller 21 and the rear roller 22 in a transmission manner, in order to drive the front roller 21 and the rear roller 22 to roll, so as to compact the construction surface.

[0067] Specifically, when the troweling device is working on the construction surface, the vibrating roller 302 abuts against the construction surface under gravity, and both the front roller 21 and the rear roller 22 are rolled on the construction surface, driving the main body 1 to move, while the slurry on the construction surface undergoes preliminary slurry rolling and extracting. The vibrating roller 302 vibrates driven by the vibration motor 303, so as to perform secondary slurry extracting on the slurry subjected to the preliminary slurry rolling and extracting. Then, the slurry combing plate 402 and the troweling plate 403 cooperatively complete the work of removing the heights and filling in the depressions on the construction surface, thus realizing a final troweling of the construction surface.

[0068] Preferably, a laser receiver 6 is further provided on the upper bottom surface of the wedge block 405. The laser receiver 6 is used to obtain a position information of a laser base surface. The lifting assembly can adjust the heights of the slurry combing plate 402

and the troweling plate 403 according to the position information received by the laser receiver 6. Specifically, the laser transmitter can be provided on the construction surface to emit the laser base surface. The laser base surface can be parallel to a horizontal plane. The laser receiver 6 can receive a laser signal emitted by the laser transmitter to obtain an information of a distance between the slurry combing plate 402 or the troweling plate 403 and the construction surface, and the lifting assembly can obtain the distance information obtained by the laser receiver 6 to adjust the distance information between the slurry combing plate 402 and the construction surface and between the troweling plate 403 and the construction surface, such that the slurry combing spatula mechanism 4 can trowel the construction surface to the same height, thereby improving the effect of the troweling operation.

[0069] Preferably, two lifting assemblies and two laser receivers 6 are provided. The two lifting assemblies are symmetrically provided with respect to the traveling direction of the troweling device. The two laser receivers 6 are also provided symmetrically with respect to the traveling direction of the troweling device.

[0070] Preferably, the troweling device further includes an auxiliary traveling mechanism 5, which is mounted on the main body 1, and is provided between the front roller 21 and the rear roller 22. The auxiliary traveling mechanism 5 can drive the main body 1 to travel, and can also rotate around the vertical direction with respect to the main body 1, and extend and retract in the vertical direction. When the troweling device is required to change a moving direction in the case of maintaining a constant posture, the auxiliary traveling mechanism 5 firstly retracts in the vertical direction, and rotates to a target direction around the vertical direction, then extends in the vertical direction and raises the main body 1, and finally drives the main body 1 to move. The traveling, extending, and retracting, and rotating motions of the auxiliary traveling mechanism 5 can be respectively realized through the cooperation of driving members such as conventional motors, electric push rods, and transmission mechanisms such as speed reducers, ball screws and the like, which belong to the prior art and will not be repeated here.

[0071] Furthermore, this embodiment also provides a troweling robot, which includes the above-mentioned troweling device.

[0072] It should be noted that the above only illustrates the preferred embodiments and the applied technical principles of the present disclosure. It can be understood by those skilled in the art that the present disclosure is not limited to the specific embodiments described herein. To those skilled in the art, various obvious changes, readjustments, and substitutions can be made without departing from the protection scope of the present disclosure. Therefore, although the present disclosure has been described in detail through the above embodiments, the present disclosure is not limited to the above embodiments, and can also include more equivalent embodiments without departing from the concept of the present disclosure. The scope of present disclosure shall be subject to the appended claims.

CLAIMS

What is claimed is:

1. A troweling device, comprising:

a main body (1);

a roller traveling mechanism mounted on the main body (1) and capable of travelling along a construction surface; and

a vibrating slurry extracting mechanism (3) mounted on the main body (1),

wherein the vibrating slurry extracting mechanism (3) is located behind the roller traveling mechanism in a traveling direction of the troweling device; the vibrating slurry extracting mechanism (3) is capable of abutting against the construction surface, and performing slurry extracting on slurry on the construction surface through vibration.

2. The troweling device of claim 1, wherein the vibrating slurry extracting mechanism (3) comprises:

a first frame (301) connected to the main body (1);

a vibrating assembly slidably connected to the first frame (301) in a vertical direction, and

wherein the vibrating assembly comprises a vibrating roller (302) and a vibration motor (303) configured to drive the vibrating roller (302) to vibrate.

3. The troweling device of claim 2, wherein the vibrating slurry extracting mechanism (3) further comprises:

a first linear driving member (306) mounted on the first frame (301), and wherein an output end of the first linear driving member (306) is connected to the vibrating assembly in a transmission manner, and the first linear driving member (306) is capable of driving the vibrating assembly to move in the vertical direction.

4. The troweling device of claim 3, wherein the vibrating assembly further comprises:

a vibration beam (304) connected to the output end of the first linear driving member (306), and wherein the vibration motor (303) is mounted on the vibration beam (304); the vibrating roller (302) is provided below the vibration beam (304); the vibrating roller (302) is rotatably connected to the vibration beam (304) and is capable of rolling on the construction surface.

5. The troweling device of claim 4, wherein the vibrating slurry extracting mechanism (3) further comprises:

a guide shaft (307) provided in the vertical direction, an upper end of the guide shaft (307) being connected to the output end of the first linear driving member (306) in a transmission manner, and a lower end of the guide shaft (307) being connected to the vibrating assembly; and

a linear bearing (308), wherein the guide shaft (307) is vertically slidably connected to the main body (1) through the linear bearing (308).

6. The troweling device of claim 5, wherein a vibration isolator (309) is further provided between the guide shaft (307) and the vibrating assembly; the vibration isolator (309) is configured to prevent the vibrating assembly from transmitting the vibration to the main body (1) along the guide shaft (307).

7. The troweling device of claim 1, further comprising:

a slurry combing spatula mechanism (4) mounted on the main body (1) and provided behind the vibrating slurry extracting mechanism (3) in the traveling direction of the troweling device, the slurry combing spatula mechanism (4) comprising:

a slurry combing plate (402), comprising a comb tooth structure configured to smooth raised slurry on the construction surface; and

a troweling plate (403) provided behind the slurry combing plate (402) and capable of

abutting against and troweling the construction surface, and wherein a lowest point of the slurry combing plate (402) is located at a position higher than a position where a lowest point of the troweling plate (403) is located.

8. The troweling device of claim 7, wherein the slurry combing plate (402) comprises, sequentially provided along the traveling direction of the troweling device:

a first slurry guiding portion (4021) having a height that gradually decreases from front to back;

a first main plate portion (4022) having a front end that is connected to a rear end of the first slurry guiding portion (4021), and the first main plate portion (4022) being provided as a flat and straight plate structure; and

a comb tooth portion (4023) having a height that gradually decreases from front to back, and wherein a front end of the comb tooth portion (4023) is connected to a rear end of the first main plate portion (4022), and a rear end of the comb tooth portion (4023) is provided with a comb tooth structure.

9. The troweling device of claim 7, wherein the slurry combing spatula mechanism (4) further comprises:

a lifting assembly mounted on the main body (1), and wherein an output end of the lifting assembly is connected to both the slurry combing plate (402) and the troweling plate (403), and is capable of driving the slurry combing plate (402) and the troweling plate (403) to move up and down synchronously.

10. A troweling robot, comprising the troweling device according to any one of claims 1-9.