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### Cloth-Clamping Flat Mop

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#### Abstract

Provided is a cloth-clamping flat mop, including a mop rod, a mop head, and a driving mechanism. A bottom of the mop head is a wiping surface, cloth-clamping mechanisms are movably mounted on both sides of the mop head, and the driving mechanism drives the cloth-clamping mechanisms to move outward or inward; each of the cloth-clamping mechanisms includes a cloth-clamping claw and a supporting arm, and guide plates are arranged on a back side at two sides of the wiping surface; in an opened state, each of the cloth-clamping mechanisms moves outward, the cloth-clamping claw is opened outward and downward along the guide plates, and the cloth-clamping claw is lower than the wiping surface; and when cloth is clamped, the cloth-clamping claw drives the wiping cloth and retracts inward along the guide plates to clamp the cloth and reset.

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## Background/Summary

### TECHNICAL FIELD

[0001] Some aspects relate to the technical field of household flat mops, and in particular to, a cloth-clamping flat mop.

### BACKGROUND

[0002] A flat mop, as a common cleaning tool for families, mainly includes a mop rod and a mop head for wiping the ground. Wiping cloth is mounted at the bottom of the mop head, and the wiping cloth is usually flat. A cloth-clamping mop is one of the flat mops. In some cloth-clamping mops with a cloth-clamping function on the current market, a cloth-clamping claw and a wiping surface at the bottom of the mop head are arranged coplanarly. In an actual using process, the cloth-clamping claw clamping the wiping cloth may partially be in direct contact with the ground in the mopping process to be worn, so that the aesthetic of the mop will also be affected. Taking a Chinese disclosure of a prior application of the applicant with publication No.: CN219846427U as an example, it discloses a cloth-clamping mop with conveniently replaced mop cloth. The cloth-clamping mop includes a mop rod and a mop bottom plate. The mop bottom plate is provided with a clamping assembly for clamping the mop cloth. The clamping assembly includes a first clamping member fixed to one end of the mop bottom plate away from the mop rod and a second clamping member movably connected to the mop bottom plate and capable of being close to or away from the first clamping member. In combination with specification and drawings, the bottom of the second clamping member on both sides and the bottom of the first clamping member are designed coplanarly. After the second clamping member clamps the mop cloth, the bottom of the second clamping member is exposed to the ground to be in direct contact with the ground, and the mop is worn during mopping. Therefore, it has a certain limitation in use.

[0003] In the prior art, a Chinese patent for invention with application No.: 201310227871.2 discloses a dedusting mop, including a mop rod and a mop plate connected to the mop rod. A mounting mechanism for mounting dedusting cloth or dedusting paper is arranged on one surface of the mop plate. The mounting mechanism includes a mounting groove and a clamping device connected to the mounting groove. The clamping device is of a hollow structure and the surface of the clamping device includes a plurality of clamping grooves. The clamping device is arranged on the upper end surface of the mop plate. The dedusting cloth needs to be manually detached and mounted, that is, the old dedusting cloth needs to be manually taken out from the clamping grooves. New dedusting cloth is partially put in the clamping grooves, so that the dedusting cloth is inconveniently replaced. For another example, a Chinese patent for invention with application No.: 200420082055.3 discloses a mop cloth clamping structure, including a panel connected to mop cloth. Cloth-clamping claws connected in a hinged manner and with teeth on the outer side are arranged on the panel. The hinged cloth-clamping claws also need to be manually opened to replace the mop cloth.

### SUMMARY

#### (I) Technical Problem to be Solved

[0004] Some aspects provide a cloth-clamping flat mop. Guide plates match with cloth-clamping claws of cloth-clamping mechanisms to clamp the wiping cloth automatically in a one-key manner, so that the cloth-clamping flat mop is convenient to operate. The wiping cloth is not in contact with hands, and the cloth-clamping claws will not be damaged during mopping, so that defects in the prior art can be overcome.

#### (II) Technical Solution

[0005] In order to solve the technical problem, some aspects provide a cloth-clamping flat mop, including a mop rod, a mop head, and a driving mechanism, where a bottom of the mop head is a wiping surface, cloth-clamping mechanisms are movably mounted at two sides of the mop head, and the cloth-clamping mechanisms are capable of being opened or retracted inward so as to clamp a cloth; the cloth-clamping mechanisms are slidably mounted on one side of the mop head away from the wiping surface (the cloth-clamping mechanisms clamping the cloth are higher than the wiping surface), and the driving mechanism is configured to drive the cloth-clamping mechanisms to move outward or inward, so that the cloth-clamping mechanisms are switched between the opened state and the inward-retracted cloth-clamping state, where: each of the cloth-clamping mechanisms includes a supporting arm and a cloth-clamping claw connected to the supporting arm, and the cloth-clamping claw is capable of moving toward one side of the wiping surface; the cloth-clamping claw is configured to, in the overall outward move outward or inward process of each of the cloth-clamping mechanisms, enable the cloth-clamping claw to move toward one side of the wiping surface synchronously, and the cloth-clamping claw is capable of abutting against the wiping cloth to grab the wiping surface; guide plates are arranged on a back side at two sides of the wiping surface; when each of the cloth-clamping mechanisms is in an opened state, each of the cloth-clamping mechanisms moves outward, the cloth-clamping claw is opened outward and synchronously downward along the guide plates, and in this case, the cloth-clamping claw is lower than the wiping surface; and when cloth is clamped, the mop head abuts against the wiping cloth, the driving mechanism controls each of the cloth-clamping mechanisms to be switched from the opened state to an inward-retracted cloth-clamping state, and the cloth-clamping claw drives the wiping cloth to retract inward to reset along the guide plates. Each of the guide plates and the cloth-clamping claw structure moving toward one side of the wiping surface automatically “grab” the wiping cloth, so that it is convenient to switch cloth clamping and stable and reliable.

[0006] In some embodiments, each of the guide plates is an inclined guide plate.

[0007] In some embodiments, an included angle between each of the guide plates and the wiping surface is an acute angle; and a cloth-clamping receiving groove is formed in the mop head, each of the guide plates extends to the cloth-clamping receiving groove, the cloth-clamping receiving groove is higher than the wiping surface, and each of the cloth-clamping mechanisms is slidably mounted in the cloth-clamping receiving groove.

[0008] In some embodiments, the cloth-clamping claw is rotationally mounted on the supporting arm up and down in a hinged manner; when each of the cloth-clamping mechanisms is in the opened state, an outer side end (for grabbing the wiping cloth) of the cloth-clamping claw is lower than the wiping surface; when each of the cloth-clamping mechanisms is in the inward-retracted cloth-clamping state, the cloth-clamping claw clamping the wiping cloth is higher than the wiping surface; and when each of the cloth-clamping mechanisms is in the inward-retracted cloth-clamping state, the cloth-clamping claw clamping the wiping cloth is higher than the wiping surface, and each of the cloth-clamping mechanisms enables the wiping cloth to entirely wrap the wiping surface in the front-back direction, so that the mopping effect is good.

[0009] In some embodiments, a pressing structure is arranged in the mop head; and when the cloth-clamping claw is opened, the pressing structure enables the cloth-clamping claw to move toward one side of the wiping surface to draw close.

[0010] In some embodiments, the pressing structure is a convex guiding edge arranged on an upper inner wall of the mop head; the convex guiding edge is configured to, when the cloth-clamping claw is opened, provide a thrust, to the cloth-clamping claw to enable the cloth-clamping claw to move toward one side of the wiping surface all along.

[0011] In some embodiments, an avoidance groove is formed in the cloth-clamping claw, and after the cloth-clamping claw retracts inward, the convex guiding edge is arranged in the avoidance groove.

[0012] In some embodiments, the pressing structure is an elastic member mounted on the cloth-

clamping claw; the elastic member is configured to enable the cloth-clamping claw to have a movement trend of swinging toward one side of the wiping surface all along; when the supporting arm of each of the cloth-clamping mechanisms drives the cloth-clamping claw to slide outward to be opened, the elastic member drives the cloth-clamping claw to enable the cloth-clamping claw to be lower than the wiping surface.

[0013] In some embodiments, the elastic member includes a torsional spring mounted at a hinge of the cloth-clamping claw, and one end of the torsional spring is mounted on the supporting arm and the other end of the torsional spring is placed on the cloth-clamping claw.

[0014] In some embodiments, the cloth-clamping claw includes equally spaced convex tooth parts; and the convex tooth parts are arranged in a staggered manner, and the staggered convex tooth parts are configured to stably grab the wiping cloth.

[0015] In some embodiments, each of the guide plates is provided with a groove corresponding to each of the convex tooth parts, and the wiping cloth is clamped in the groove, so that the frictional force and the clamping force of the clamped wiping cloth are increased in a concave-convex clamping manner.

[0016] In some embodiments, each of the convex tooth parts is eccentrically conical and each of the guide plates is provided with a locking tooth between two adjacent convex tooth parts, where the locking tooth faces towards the cloth-clamping receiving groove.

[0017] In some embodiments, a driving frame is slidably mounted in the mop head, a plurality of pairs of inclined guide grooves are formed in the driving frame in a spaced manner in the length direction, inclined guide pillars matching with the inclined guide grooves are arranged on the supporting arm, and the plurality of pairs of inclined guide grooves drive the cloth-clamping claw to have a plurality of clamping points.

[0018] In some embodiments, a driving cam is rotatably mounted at an end of the mop rod, an eccentric pillar is arranged on the driving cam, and a guide groove matching with the eccentric pillar is formed in the driving frame.

[0019] In some embodiments, each of the cloth-clamping mechanisms is switched by the mop rod; the driving mechanism includes a driving gear shaft rotationally mounted on the mop head and the supporting arm is correspondingly provided with a meshing rack meshing with the driving gear shaft; and the mop rod is in transmission connection to the driving gear shaft, and the mop rod drives the driving gear shaft to rotate, so that each of the cloth-clamping mechanisms is switched between the opened state and the inward-retracted cloth-clamping state.

[0020] In some embodiments, a guiding fastener is arranged on the mop head, and a guiding catching groove in sliding fit with the guiding fastener is formed in the supporting arm; the mop head includes an upper cover and a lower cover that are interlocked with each other, and the upper cover and the lower cover are spliced to form the cloth-clamping receiving groove; and the guiding fastener is arranged on the upper cover, each of the guide plates is arranged on the lower cover, and the wiping surface is located on one side of a bottom end of the lower cover.

[0021] In some embodiments, a guide sleeve is sleeved over the mop rod, and the guide sleeve is mounted in a hinged manner on the mop head through a universal joint.

[0022] In some embodiments, each of the guide plates is a thin-lip guide plate, and the thin-lip guide plate protrudes out of an outer side end of the cloth-clamping claw.

### (III) Beneficial Effects

[0023] Compared with the prior art, the cloth-clamping flat mop provided by some aspects has the following advantages:

[0024] According to the cloth-clamping mechanisms in some aspects, the cloth-clamping claw is capable of moving relatively toward one side of the wiping surface while both sides of the mop head move outward or retract inward, so that after the wiping surface of the mop head is placed on the external wiping cloth, the cloth-clamping claw is capable of being in contact with the wiping cloth and the wiping cloth is guided by the guide plates to be finally clamped to enter the cloth-

clamping receiving groove when the cloth-clamping claw of each of the cloth-clamping mechanisms clamps the cloth. The cloth-clamping receiving groove is higher than the wiping surface, so that people never mind that the cloth-clamping claw is bumped when using the mop to mop the floor in daily life.

[0025] The cloth-clamping claw in some aspects is mounted in a hinged manner on the supporting arm of each of the cloth-clamping mechanisms. Therefore, the cloth-clamping claw may turn downward to “grab” the wiping cloth. The torsional spring of the elastic member arranged at the hinge guarantees that the cloth-clamping claw is capable of clamping the wiping cloth.

[0026] The cloth-clamping claw in some aspects includes the convex tooth parts equally spaced and arranged in a staggered manner, and the convex tooth parts are eccentrically arranged to effectively grab the wiping cloth.

[0027] According to the cloth-clamping mechanism in some aspects, the supporting arm retracts inward or moves outward since the mop rod drives the driving gear shaft to rotate. In the outward move outward or inward or unfolding process, the torsional spring drives the cloth-clamping claw downward to clamp the wiping cloth, and in the inward moving process, the wiping cloth is clamped in the cloth-clamping receiving groove, so that the overall operation is convenient and reliable. The wiping cloth is conveniently replaced without contact with hands. The mop is easy to operate and the wiping cloth can be replaced in a “one-key manner”.

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## Description

### BRIEF DESCRIPTION OF FIGURES

[0028] To describe the technical solutions of the embodiments of this application more clearly, the following briefly introduces the accompanying drawings required for describing the embodiments. Apparently, the accompanying drawings in the following description show only some embodiments of this application, and a person of ordinary skill in the art may still derive other drawings from these accompanying drawings without creative efforts.

[0029] FIG. 1 is a stereogram of a cloth-clamping flat mop provided by some aspects;

[0030] FIG. 2 is a stereogram of the bottom of a cloth-clamping flat mop provided by some aspects.

[0031] FIG. 3 is a schematic structural diagram of a cloth-clamping flat mop provided by some aspects.

[0032] FIG. 4 is a section view of A-A in FIG. 3 of some aspects.

[0033] FIG. 5 is a stereogram of a mop head of a cloth-clamping flat mop provided by some aspects.

[0034] FIG. 6 is a stereogram of a lower cover of a cloth-clamping flat mop provided by some aspects.

[0035] FIG. 7 is a stereogram of an upper cover of a cloth-clamping flat mop provided by some aspects.

[0036] FIG. 8 is a stereogram of a cloth-clamping mechanism of a cloth-clamping flat mop provided by some aspects.

[0037] FIG. 9 is a stereogram of a supporting arm of a cloth-clamping flat mop provided by some aspects.

[0038] FIG. 10 is a stereogram of a cloth-clamping claw of a cloth-clamping flat mop provided by some aspects.

[0039] FIG. 11 is a stereogram of a driving gear shaft of a cloth-clamping flat mop provided by some aspects.

[0040] FIG. 12 is a stereogram of a cloth-clamping flat mop provided by some aspects slidably mounted to the upper cover.

[0041] FIG. **13** is a stereogram of a cloth-clamping flat mop provided by some aspects in an opened state.

[0042] FIG. **14** is a schematic structural diagram of a cloth-clamping flat mop provided by some aspects in the opened state to grab wiping cloth.

[0043] FIG. **15** is a real object stereogram of a cloth-clamping flat mop provided by some aspects grabbing the wiping cloth.

[0044] FIG. **16** is a local real object state diagram of a cloth-clamping claw of a cloth-clamping flat mop provided by some aspects clamping the wiping cloth into a cloth-clamping receiving groove.

[0045] FIG. **17** is a brief schematic structural diagram of a guide plate provided by some aspects, which is a thin lip guide plate.

[0046] FIG. **18** is a schematic structural diagram of a convex guiding edge provided by some aspects placed in an avoidance groove.

[0047] FIG. **19** is a stereogram of the convex guiding edge provided by some aspects.

[0048] FIG. **20** is a stereogram of a driving cam, a driving frame, and a supporting arm in driving connection provided by some aspects.

[0049] FIG. **21** is an exploded view of the driving cam, the driving frame, and the supporting arm provided by some aspects.

[0050] In the figures, names of components corresponding to reference numerals: [0051] **1**, mop rod; **2**, mop head; **3**, cloth-clamping receiving groove; **4**, cloth-clamping mechanism; **5**, wiping cloth; **6**, torsional spring; **7**, driving gear shaft; **8**, guide sleeve; **9**, driving cam; **901**, eccentric pillar; [0052] **201**, wiping surface; **202**, guide plate; **203**, locking tooth; **204**, guiding fastener; **205**, upper cover; **206**, lower cover; **207**, guide groove; **208**, convex guiding edge; [0053] **401**, supporting arm; **402**, cloth-clamping claw; **403**, convex tooth part; **404**, meshing rack; **405**, guiding catching groove; **406**, driving frame; **4011**, inclined guide pillar; **4021**, avoidance groove; **4061**, inclined guide groove; **4062**, guide groove; and [0054] **801**, universal joint.

#### DETAILED DESCRIPTION

[0055] The present application will be described in detail below in conjunction with accompanying drawings and specific embodiments.

[0056] The implementation manners of the present application will be described below with reference to specific examples. Those skilled in the art may easily understand other advantages and effects of the present application by the contents disclosed in the present specification. Apparently, the described embodiments are merely a part of embodiments and are not all the embodiments. The present application may also be implemented or applied through other different specific implementation manners. Various modifications or changes may also be made on the details in the present specification without departing from the spirit of the present invention based on different viewpoints and applications. It should be noted that in the absence of conflicts, the following embodiments and features in the embodiments may be combined mutually. Based on the embodiments in the present application, all other embodiments obtained by those of ordinary skill in the art without creative work fall within the scope of protection of the present application.

[0057] It should be noted that various aspects of the embodiments in the range of the appended claims will be described below. Apparently, the aspects described herein may be reflected in various wide forms, and any special structures and/or functions described herein are merely illustrative. Based on the present application, those skilled in the art should understand that one aspect described herein may be implemented independently of any other aspects, and two or more aspects may be combined in various modes. For example, the device and/or practical method may be implemented using any number or aspect illustrated herein. Besides, the device and/or practical method may be implemented using other structures and/or functions except for one or more aspects illustrated herein.

[0058] It should also be noted that the drawings provided in the following embodiments only schematically illustrate the basic concept of the present application, and the drawings show only

the components related to the present application instead of being drawn according to the quantity, shape, and size of the components in actual implementation. In actual implementation, the shape, quantity and proportion of the components may be changed at will, and the layout of components may be more complicated.

[0059] In addition, in the description below, provision of specific details is to facilitate a thorough understanding of the examples. However, it will be understood by those skilled in the art that some aspects of the present disclosure may be practiced without these specific details.

[0060] The technical solution provided by the embodiments of the present application will be described with reference to the accompanying drawings.

[0061] Referring to FIG. 1 and FIG. 4, in order to solve the technical problem, the specification provides a cloth-clamping flat mop, specifically including a mop rod **1**, a mop head **2**, and a driving mechanism. The bottom of the mop head **2** is a wiping surface **201**, and wiping cloth **5** is mounted on the wiping surface **201** in a direct contact manner. Cloth-clamping mechanisms **4**, capable of being opened or retracted inward to clamp cloth, are movably mounted on front and back sides of the mop head **2**, and the cloth-clamping mechanisms **4** are used for clamping the wiping cloth **5**. The driving mechanism drives the cloth-clamping mechanisms **4** to move outward or inward, so that the cloth-clamping mechanisms **4** are capable of being switched between an opened state and an inward-retracted cloth-clamping state. When in the opened state, the cloth-clamping mechanisms **4** are used for waiting for clamping the wiping cloth **5**, and in the process that the cloth-clamping mechanisms **4** are switched from the opened state to the inward-retracted cloth-clamping state, the cloth-clamping mechanisms **4** clamp and fix the wiping cloth **5**.

[0062] Each of the cloth-clamping mechanisms **4** includes a supporting arm **401** and a cloth-clamping claw **402** connected to the supporting arm **401**. The cloth-clamping claw **402** is capable of moving toward one side of the wiping surface **201** (the cloth-clamping claw **402** moves toward one side of the wiping surface **201** to contact and grab the wiping cloth **5**). The cloth-clamping claw **402** is configured to, in the overall outward move outward or inward process of each of the cloth-clamping mechanisms **4**, enables the cloth-clamping claw **402** to move toward one side of the wiping surface **201** synchronously to draw close.

[0063] Guide plates **202** are arranged on a back side at two sides of the wiping surface **201**. When each of the cloth-clamping mechanisms **4** is in an opened state, each of the cloth-clamping mechanisms **4** moves outward, the cloth-clamping claw **402** is opened outward and synchronously downward along the guide plates **202**, and in this case, the cloth-clamping claw **402** is lower than the wiping surface **201**. When cloth is clamped, the mop head **2** abuts against the wiping cloth **5**, the driving mechanism controls each of the cloth-clamping mechanisms **4** to be switched from the opened state to an inward-retracted cloth-clamping state, and the cloth-clamping claw **402** drives the wiping cloth **5** to retracts inward to reset along the guide plates **202**. Each of the guide plates **202** is configured to guide the wiping cloth **5** to enter the inward-retracted cloth-clamping state, and the inward-retracted cloth-clamping state is a state when the cloth-clamping flat mop is being used for moping and cleaning the floor normally.

[0064] In some preferred embodiments, as shown in FIG. 5 and FIG. 6, each of the guide plates **202** is an inclined guide plate for assisting the cloth-clamping claw **402** in guiding the wiping cloth **5**.

[0065] In another embodiment, as shown in FIG. 17, each of the guide plates **202** may also be a thin lip guide plate. The thickness of the thin lip guide plate is proper when the thin lip guide plate does not interfere with the cloth-clamping claw **402**. The thin lip guide plate is usually of a 1-3 mm thin plate structure. The thin lip guide plate protrudes out of an outer side end of the cloth-clamping claw **402** (in combination with FIG. 17, the thin lip guide plate protrudes out of the cloth-clamping claw **402** in the inward-retracted cloth-clamping state).

[0066] As shown in FIG. 4, an included angle between each of the obliquely arranged guide plates **202** and the wiping surface **201** is an acute angle.

[0067] It should be pointed out that each of the cloth-clamping mechanisms **4** is slidably mounted on one side of the mop head **2** away from the wiping surface **201** (the cloth-clamping claw **402** in the inward-retracted cloth-clamping state is higher than the wiping surface **201**). In some embodiments, as shown in FIG. **4** and FIG. **5**, a cloth-clamping receiving groove **3** is formed in the mop head **2**, and the cloth-clamping receiving groove **3** is higher than the wiping surface **201**. Each of the guide plates **202** extends to the cloth-clamping receiving groove **3**, each of the cloth-clamping mechanisms **4** is slidably mounted in the cloth-clamping receiving groove **3**, and the cloth-clamping claw **402** of each of the cloth-clamping mechanisms **4** in the inward-retracted cloth-clamping state retracts inward in the cloth-clamping receiving groove **3**. FIG. **16** is a real object reference diagram where each of the cloth-clamping mechanisms **4** clamps the wiping cloth **5** in the cloth-clamping receiving groove **3** in the inward-retracted cloth-clamping state. In this case, each of the cloth-clamping mechanisms **4** retracts inward in the cloth-clamping receiving groove **3**. The cloth-clamping claw **402** clamping the wiping cloth **5** is also placed in the cloth-clamping receiving groove **3**. Each of the cloth-clamping mechanisms **4** is capable of enabling the wiping cloth **5** to completely clamp and wrap the wiping surface **201** in the front-back direction, so that the mopping effect is excellent, and a phenomenon that the cloth-clamping claw is worn as the cloth-clamping claw is exposed during mopping when the cloth-clamping claw is flush with the wiping surface in the prior art is avoided.

[0068] Each of the guide plates **202** forms a cloth-clamping path when clamping the wiping cloth **5** and guides the cloth-clamping claw **402** to clamp the wiping cloth **5** in the cloth-clamping receiving groove **3** (the outer side part of the wiping cloth **5** is turned to enter the cloth-clamping receiving groove **3**). As shown in FIG. **15**, it is a real object reference diagram where each of the cloth-clamping mechanisms **4** on the mop head **2** clamps the wiping cloth **5** in the cloth-clamping receiving groove **3**. The wiping cloth **5** on the front and back sides is partially and automatically “put in” the cloth-clamping receiving groove **3** through each of the cloth-clamping mechanisms **4**, so that a purpose of automatically clamping the wiping cloth **5** is achieved, and the wiping cloth is conveniently replaced. The wiping cloth **5** is not manually mounted on the mop head **2**, and the wiping cloth **5** is prevented from being in contact with hands.

[0069] The wiping cloth **5** in the embodiment of the specification is a non-woven fabric. A real sample product of the cloth-clamping flat mop according to the above principle is good in actual mopping effect, accurate and reliable to clamp cloth, and convenient to switch cloth clamping.

[0070] In an example, the cloth-clamping claw **402** in the embodiment of the specification may be rotationally mounted on one side of the supporting arm **401** up and down by using a hinged shaft in a hinged manner, and the cloth-clamping claw **402** may turn toward one side of the wiping cloth **5** to draw close. The cloth-clamping claw **402** in the opened state is in contact with the wiping cloth **5**, and when being switched from the opened state to the inward-retracted cloth-clamping state, the cloth-clamping claw **402** clamps the wiping cloth **5** in the cloth-clamping receiving groove **3**.

[0071] It should be pointed out that, different from that in the prior art, the cloth-clamping claw **402** in the embodiment of the specification may not only be driven by the supporting arm **401** to move outward or inward in the cloth-clamping receiving groove **3**, but also may turn and swing toward one side of the wiping surface **201** relative to the supporting arm **401**, so that the cloth-clamping claw **402** is capable of abutting against the wiping cloth **5** to grab the wiping cloth **5**. Furthermore, the guide plates **202** arranged on both sides form the cloth-clamping path, and the wiping cloth **5** is finally clamped and positioned in the cloth-clamping receiving groove **3**, so that the operation is simple, and the wiping cloth may be replaced in a “one-key manner”. The obliquely arranged guide plates **202** are further beneficial for clamping the cloth more stably. The cloth-clamping claw **402** in the opened state is large in unfolding stroke, so that it is convenient to grab the wiping cloth **5**.

[0072] When each of the cloth-clamping mechanisms **4** clamps the cloth, as shown in FIG. **14**, the wiping surface **201** of the mop head **2** is placed on new wiping cloth **5**, and the cloth-clamping



claw **402** in the opened state (waiting for clamping the cloth) abuts against the wiping cloth **5**. In the process that each of the cloth-clamping mechanisms **4** is switched from the opened state to the inward-retracted cloth-clamping state, the supporting arm **401** guides the cloth-clamping claw **402** to retract inward to reset. The cloth-clamping claw **402** correspondingly clamps the wiping cloth **5** guided by each of the guide plates **202** in the cloth-clamping receiving groove **3** finally through the plane of the wiping surface **201**. As shown in FIG. **14**, in this case, each of the cloth-clamping mechanisms **4** is in the inward-retracted cloth-clamping state, and the cloth-clamping claw **402** retracts inward in the cloth-clamping receiving groove **3**.

[0073] In some embodiments, when each of the cloth-clamping mechanisms **4** is in the opened state, the cloth-clamping claw **402** is lower than the wiping surface **201**. As shown in FIG. **14**, after ensuring that the entire mop head **2** is placed on the wiping cloth **5**, the cloth-clamping claw **402** is capable of contacting and clamping the wiping cloth **5**.

[0074] It should be pointed out that when the cloth-clamping claw **402** in the embodiment of the specification moves outward in the cloth-clamping receiving groove **3**, the cloth-clamping claw may move downward synchronously (in the embodiment of the specification, the cloth-clamping claw is hinged and swings specifically), so that the cloth-clamping claw **402** is capable of abutting against the plane of the wiping surface **201** (when the wiping surface **201** is placed on the wiping cloth **5**, the cloth-clamping claw **402** may move to abut against the wiping cloth **5**).

[0075] In some embodiments, as shown in FIG. **18** and FIG. **19**, a pressing structure is arranged in the mop head **2**; and when the cloth-clamping claw **402** is opened, the pressing structure enables the cloth-clamping claw **402** to move toward one side of the wiping surface **201** to draw close. In the embodiment, the pressing structure is a convex guiding edge **208** arranged on an upper inner wall of the mop head **2**. A plurality of convex guiding edges **208** may be arranged in a spaced manner in a linear direction. The convex guiding edges **208** are configured to, when the cloth-clamping claw **402** is opened, provide a thrust, to the cloth-clamping claw **402** to enable the cloth-clamping claw to move toward one side of the wiping surface **201** all along. An avoidance groove **4021** is formed in the cloth-clamping claw **402**, and after the cloth-clamping claw **402** retracts inward, the convex guiding edge **208** is arranged in the avoidance groove **4021**.

[0076] In this structure, when the cloth-clamping claw **402** is opened, the convex guiding edge **208** will be separated from the avoidance groove **4021**, and in this case, the convex guiding edge **208** will press the cloth-clamping claw **402**, so that the cloth-clamping claw **402** swings relative to the supporting arm **401**. The convex guiding edge **208** drives the cloth-clamping claw **402** to swing, so that the structure is simple and reliable to drive. The convex guiding edge **208** and the mop head **2** may be of an integrated structure. When the cloth-clamping claw **402** retracts inward into the mop head **2**, the convex guiding edge **208** is placed in the avoidance groove **4021** again for avoidance, so that the design is skillful.

[0077] In some embodiments, the pressing structure is an elastic member mounted on the cloth-clamping claw **402**. The elastic member is configured to enable the cloth-clamping claw **402** to have a movement trend of swinging toward one side of the wiping surface **201** all along. When the supporting arm **401** of each of the cloth-clamping mechanisms **4** drives the cloth-clamping claw **402** to slide outward to be opened, the elastic member drives the cloth-clamping claw **402** to enable the cloth-clamping claw to be lower than the wiping surface **201** (the cloth-clamping claw **402** has the trend of moving toward one side of the wiping surface **201** all along to grab the wiping cloth **5**).

[0078] In an example, as shown in FIG. **8**, the elastic member includes a torsional spring **6** mounted at a hinge of the cloth-clamping claw **402**, one end of the torsional spring **6** is mounted on the supporting arm **401**, and the other end of the torsional spring is placed on the cloth-clamping claw **402**.

[0079] In some embodiments, as shown in FIG. **1** and FIG. **10**, the cloth-clamping claw **402** includes equally spaced convex tooth parts **403** arranged in a staggered manner, and the staggered convex tooth parts **403** are configured to stably grab the wiping cloth **5**, so that the grabbing area of

the wiping cloth **5** is effectively increased.

[0080] In some preferred embodiments, referring to FIG. 5, each of the guide plates **202** is provided with a groove **207** corresponding to each of the convex tooth parts **403**, and the wiping cloth **5** is clamped in the groove **207**, so that the frictional force and the clamping force of the clamped wiping cloth **5** are increased in a concave-convex clamping manner.

[0081] FIG. 13 and FIG. 14 are schematic diagrams where each of the cloth-clamping mechanisms **4** on the mop head **2** is in the opened state.

[0082] As shown in FIG. 15, the wiping cloth **5** is integrally greater than the mop head **2** in length and width dimensions (in the figure, the wiping cloth **5** is only for reference, and the length and width dimensions may be designed and optimized separately).

[0083] As shown in FIG. 10, in one preferred embodiment, the convex tooth parts **403** are eccentrically conical, so that the convex tooth parts **403** are staggered on the cloth-clamping claw **402**. The convex tooth parts **403** in the embodiment of the specification are different from existing tooth part structures in a simple linear array layout. The eccentrically arranged convex tooth parts **403** are staggered on the cloth-clamping claw **402**, which is beneficial for the convex tooth parts **403** to better clamp the wiping cloth **5**, thereby ensuring accurate and reliable cloth clamping when the wiping cloth **5** is replaced every time.

[0084] In some preferred embodiments, as shown in FIG. 5, each of the guide plates **202** is provided with a locking tooth **203** between two adjacent convex tooth parts **403**, where the locking tooth **203** faces towards the cloth-clamping receiving groove **3**. The locking tooth **203** is higher than each of the guide plates **202**. The locking tooth **203** plays a role in clamping the wiping cloth **5** in an assisting manner.

[0085] As shown in FIG. 5, in an example, the locking tooth **203** is a sawtooth part.

[0086] In some embodiments, as shown in FIG. 20 and FIG. 21, a driving frame **406** is slidably mounted in the mop head **2**, a plurality of pairs of inclined guide grooves **4061** are formed in the driving frame **406** in a spaced manner in the length direction, inclined guide pillars **4011** matching with the inclined guide grooves **4061** are arranged on the supporting arm **401**, and the inclined guide pillars **4011** are placed in corresponding inclined guide grooves **4061**; and the plurality of pairs of inclined guide grooves **4061** and the inclined guide pillars **4011** match to drive the cloth-clamping claw **402** to have a plurality of clamping points. When the cloth-clamping claw **402** is longer, if it is driven and clamped at both ends (i.e., both sides are the clamping points), the cloth-clamping claw **402** is easy to deform. This structure uses the plurality of clamping points to prevent the cloth-clamping claw **402** from deforming, so that it is more reliable to clamp the cloth.

[0087] The driving cam **9** is rotatably mounted at an end of the mop rod **1**. The mop rod **1** is of a twisted rod structure. The mop rod **1** may drive the driving cam **9** to rotate. The mop rod **1** of the twisted rod structure belongs to the prior art, which is not described in detail herein. An eccentric pillar **901** is arranged on the driving cam **9**, a guide groove **4062** matching with the eccentric pillar **901** is formed in the driving frame **406**, and the eccentric pillar **901** is placed in the guide groove **4062**. During driving, the mop rod **1** may drive the driving cam **9** to rotate, the driving cam **9** drives the driving frame **406** to slide through the eccentric pillar **901**, and the driving frame **406** drives the supporting arm **401** to slide, so that the supporting arm **401** drives the cloth-clamping claw **402** to move outward or inward.

[0088] In some embodiments, as shown in FIG. 4 and FIG. 13, the driving mechanism includes a driving gear shaft **7** rotationally mounted on the mop head **2**. Specifically, the driving gear shaft **7** in the embodiment of the specification is rotationally fastened to the mop head **2**. As shown in FIG. 9, the supporting arm **401** is correspondingly provided with a meshing rack **404** meshing with the driving gear shaft **7**. The mop rod **1** is in transmission connection to the driving gear shaft **7**, and the mop rod **1** drives the driving gear shaft **7** to rotate, so that each of the cloth-clamping mechanisms **4** is switched between the opened state and the inward-retracted reset state.

[0089] It should be pointed out that a specific structure of the mop rod **1** realizing rotation of the

driving gear shaft 7 is not limited in the embodiment of the specification, and the mop rod 1 may be rotated circumferentially (clockwise rotation or anticlockwise rotation) to control the driving gear shaft 7 to rotate to switch the state of each of the cloth-clamping mechanisms 4. The mop rod 1 may also be axially pressed (a vertical movement is switched to the rotating movement of the driving gear shaft 7 through the twisted rod structure) to control the driving gear shaft 7 to rotate to switch the state of each of the cloth-clamping mechanisms 4. As shown in FIG. 4, in an example, power is transmitted by way of transmission connection of the twisted rod, which is not specifically described in the embodiment of the specification. When the dirty wiping cloth 5 is taken down, the mop rod 1 drives the driving gear shaft 7 to rotate, so that each of the cloth-clamping mechanisms 4 is switched to the opened state, and in this case, the dirty wiping cloth 5 may be detached (in this case, the dirty wiping cloth 5 may be treaded to ensure that it is completely separated from the mop head 2).

[0090] In some embodiments, referring to FIG. 12, a guiding fastener 204 is arranged on the mop head 2 and a guiding catching groove 405 in sliding fit with the guiding fastener 204 is formed in the supporting arm 401. Through sliding fit between the guiding fastener 204 and the guiding catching groove 405, the supporting arm 401 is slidably positioned in the cloth-clamping receiving groove 3 of the mop head 2.

[0091] Specifically, in combination with FIG. 1, FIG. 5, FIG. 6, and FIG. 7, the mop head 2 includes an upper cover 205 and a lower cover 206 that are interlocked with each other, and the upper cover 205 and the lower cover 206 are spliced to form the cloth-clamping receiving groove 3; and the guiding fastener 204 is arranged on the upper cover 205, each of the guide plates 202 is arranged on the lower cover 206, and the wiping surface 201 is located on one side of a bottom end of the lower cover 206. A decorative bottom plate is mounted at the bottom of the lower cover 206 to form the wiping surface 201.

[0092] It should be pointed out that the wiping surface 201 in this application is flat in structure, so that the entire mop head 2 is simple and attractive in structure.

[0093] As shown in FIG. 4 and FIG. 6, the section of the lower cover 206 is integrally in an isosceles trapezoid shape (its bevel edges are structures of the guide plates 202).

[0094] In some embodiments, as shown in FIG. 1 and FIG. 4, a guide sleeve 8 is sleeved over the mop rod 1, and the guide sleeve 8 is mounted in a hinged manner on the mop head 2 through a universal joint 801, so that the mop rod 1 is capable of rotating in the front-back direction or the left-right direction, which is not described in detail in the embodiment of the specification.

[0095] For the same or similar parts between the embodiments in the specification, reference may be made to each other. Each embodiment focuses on differences from other embodiments.

[0096] The foregoing descriptions are merely a specific implementation of this application, but are not intended to limit the protection scope of this application. Any variation or replacement readily figured out by a person skilled in the art within the technical scope disclosed in this application shall fall within the protection scope of this application. Therefore, the protection scope of this application shall be subject to the protection scope of the claims.

## Claims

1. A cloth-clamping flat mop, comprising: a mop rod (1); a mop head (2); and a driving mechanism, wherein a bottom of the mop head (2) is a wiping surface (201), cloth-clamping mechanisms (4) are movably mounted at two sides of the mop head (2), and the cloth-clamping mechanisms (4) are capable of being opened or retracted inward, so as to clamp a cloth, the cloth-clamping mechanisms (4) are slidably mounted on one side of the mop head (2) away from the wiping surface (201), and the driving mechanism is configured to drive the cloth-clamping mechanisms (4) to move outward or inward, wherein: each of the cloth-clamping mechanisms (4) comprises a supporting arm (401) and a cloth-clamping claw (402) connected to the supporting arm

(401), the cloth-clamping claw (402) is capable of moving toward one side of the wiping surface (201), and guide plates (202) are arranged on a back side at two sides of the wiping surface (201); when each of the cloth-clamping mechanisms (4) is in an opened state, each of the cloth-clamping mechanisms (4) moves outward, the cloth-clamping claw (402) is opened outward and synchronously downward along the guide plates (202), so that the cloth-clamping claw (402) is lower than the wiping surface (201); and when the cloth is clamped, the mop head (2) abuts against the wiping cloth (5), the driving mechanism controls each of the cloth-clamping mechanisms (4) to be switched from an opened state to an inward-retracted cloth-clamping state, and the cloth-clamping claw (402) drives the wiping cloth (5) to move inward along the guide plates (202).

2. The cloth-clamping flat mop according to claim 1, wherein each of the guide plates (202) is an inclined guide plate.

3. The cloth-clamping flat mop according to claim 2, wherein a cloth-clamping receiving groove (3) is formed in the mop head (2), each of the guide plates (202) extends to the cloth-clamping receiving groove (3), and an included angle between each of the guide plates (202) and the wiping surface (201) is an acute angle; and each of the cloth-clamping mechanisms (4) is slidably mounted in the cloth-clamping receiving groove (3).

4. The cloth-clamping flat mop according to claim 1, wherein the cloth-clamping claw (402) is rotationally mounted on the supporting arm (401) up and down in a hinged manner; when each of the cloth-clamping mechanisms (4) is in the opened state, an outer side end of the cloth-clamping claw (402) is lower than the wiping surface (201); and when each of the cloth-clamping mechanisms (4) is in the inward-retracted cloth-clamping state, the cloth-clamping claw (402) clamping the wiping cloth (5) is higher than the wiping surface (201).

5. The cloth-clamping flat mop according to claim 1, wherein a pressing structure is arranged in the mop head (2); and when the cloth-clamping claw (402) is opened, the pressing structure enables the cloth-clamping claw (402) to move toward one side of the wiping surface (201) and to draw close.

6. The cloth-clamping flat mop according to claim 5, wherein the pressing structure is a convex guiding edge (208) arranged on an upper inner wall of the mop head (2); the convex guiding edge (208) is configured to, when the cloth-clamping claw (402) is opened, always provide a thrust to the cloth-clamping claw (402) to enable the cloth-clamping claw to move toward one side of the wiping surface (201).

7. The cloth-clamping flat mop according to claim 6, wherein an avoidance groove (4021) is formed in the cloth-clamping claw (402), and after the cloth-clamping claw (402) moves inward, the convex guiding edge (208) is located in the avoidance groove (4021).

8. The cloth-clamping flat mop according to claim 5, wherein the pressing structure is an elastic member mounted on the cloth-clamping claw (402); the elastic member is configured to enable the cloth-clamping claw (402) to always have a movement trend of swinging toward one side of the wiping surface (201); when the supporting arm (401) of each of the cloth-clamping mechanisms (4) drives the cloth-clamping claw (402) to slide outward to be opened, the elastic member drives the cloth-clamping claw (402) to enable the cloth-clamping claw to be lower than the wiping surface (201); and the elastic member comprises a torsional spring (6) mounted at a hinge of the cloth-clamping claw (402), and one end of the torsional spring (6) is mounted on the supporting arm (401) and the other end of the torsional spring is placed on the cloth-clamping claw (402).

9. The cloth-clamping flat mop according to claim 3, wherein the cloth-clamping claw (402) comprises convex tooth parts (403) which are equally spaced; the convex tooth parts (403) are arranged in a staggered manner, and the staggered convex tooth parts (403) are configured to stably grab the wiping cloth (5); and each of the guide plates (202) is provided with a groove (207) corresponding to each of the convex tooth parts (403), and the wiping cloth (5) is clamped in the groove (207), so that the frictional force and the clamping force of the clamped wiping cloth (5) are increased.

10. The cloth-clamping flat mop according to claim 9, wherein each of the convex tooth parts (403)

is eccentrically conical and each of the guide plates (202) is provided with a locking tooth (203) between two adjacent convex tooth parts (403) wherein the locking tooth (203) faces toward the cloth-clamping receiving groove (3).

**11.** The cloth-clamping flat mop according to claim 1, wherein a driving frame (406) is slidably mounted in the mop head (2), a plurality of pairs of inclined guide grooves (4061) are formed in the driving frame (406) in a spaced manner in the length direction, inclined guide pillars (4011) matching with the inclined guide grooves (4061) are arranged on the supporting arm (401), and the plurality of pairs of inclined guide grooves (4061) drive so that the cloth-clamping claw (402) has a plurality of clamping points.

**12.** The cloth-clamping flat mop according to claim 11, wherein a driving cam (9) is rotatably mounted at an end of the mop rod (1), an eccentric pillar (901) is arranged on the driving cam (9), and a guide groove (4062) matching with the eccentric pillar (901) is formed in the driving frame (406).

**13.** The cloth-clamping flat mop according to claim 9, wherein the driving mechanism comprises a driving gear shaft (7) rotationally mounted on the mop head (2), and the supporting arm (401) is correspondingly provided with a meshing rack (404) meshing with the driving gear shaft (7); and the mop rod (1) is in transmission connection to the driving gear shaft (7), and the mop rod (1) drives the driving gear shaft (7) to rotate, so that each of the cloth-clamping mechanisms (4) is switched between the opened state and the inward-retracted cloth-clamping state.

**14.** The cloth-clamping flat mop according to claim 3, wherein a guiding fastener (204) is arranged on the mop head (2), and a guiding catching groove (405) in sliding fit with the guiding fastener (204) is formed in the supporting arm (401); the mop head (2) comprises an upper cover (205) and a lower cover (206) that are interlocked with each other, and the upper cover (205) and the lower cover (206) are spliced to form the cloth-clamping receiving groove (3); and the guiding fastener (204) is arranged on the upper cover (205), each of the guide plates (202) is arranged on the lower cover (206), and the wiping surface (201) is located on one side of a bottom of the lower cover (206).

**15.** The cloth-clamping flat mop according to claim 1, wherein each of the guide plates (202) is a thin-lip guide plate, and the thin-lip guide plate protrudes out of an outer side end of the cloth-clamping claw (402).

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