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(54) **CORRECTION TAPE CAPABLE OF SELF-LOCKING AFTER PUSHING OUT GUIDE**

(57) A correction tape capable of self-locking after a guide is pushed out comprises a correction tape body. The correction tape body comprises a control component (4) and a movable member (5) having a pressing guide (51). The control component (4) controls movement of the movable member (5) and comprises a first slider (41). The movable member (5) is provided with a position-limiting slot (53). A housing (1) is provided with a guide slot (16). The position-limiting slot (53) has a starting end and a stopping end. The first slider (41) passes through the guide slot (16) and the position-limiting slot (53) sequentially. Each of the position-limiting slot (53) and the guide

slot (16) is a straight slot, a curved slot, or a composite slot. When the correction tape capable of self-locking after a guide is pushed out is in use, the first slider (41) is retained in the position-limiting slot (53), and moves, when pushed by an external force, to drive the movable member (5) to move to push out or retract the pressing guide (51). Pushing-out and retraction of the guide are easy and fast, and during the application of tape, a locking force is produced at the stopping end of the position-limiting slot (53) to prevent the pressing guide (51) from retracting during use.

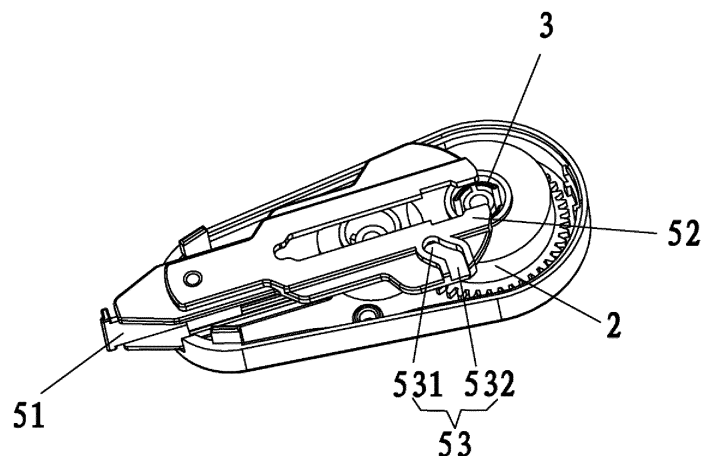


FIG.3

## Description

### Technical Field

**[0001]** The present invention relates to a kind of correction tape, and more specifically relates to a kind that has a self-locking mechanism, wherein the correction tape has a tape guide capable of self-locking after being pushed out.

### Background Art

**[0002]** Nowadays, correction tape is a kind of indispensable commodity in offices and schools. A correction tape commonly available nowadays is usually provided with a protective cap to protect the tape guide. The protective cap is removed during use, and is capped again to the tape guide when the correction tape is not in use. This structural design has some disadvantages: on one hand, the cap has to be removed and then capped again to the tape guide repeatedly, thus causing trouble during use; on the other hand, the removed cap may easily get lost during use, and thus often causing problems such as damages of the tape guide in the absence of protection by the cap, which in turns causing defects or pre-matured end of service life of the entire correction tape.

**[0003]** In view of the problem of easily lost removed cap, the market has provided a kind of correction tape having a retractable tape guide. As disclosed in CN204687662U (Chinese utility model application number 201520330338.3) titled "a retractable pen-type correction tape", the tape guide can be extended or retracted by the cooperation between an inclined position limiting arm and a retract-positioning groove and an extend-positioning groove. However, during retraction, the a great force is required to "force" a free end portion of the inclined position limiting arm to slide out of the extend-positioning groove. Another kind of retractable type of correction tape is also provided which may easily achieve extension and retraction of the tape guide, however, the tape guide is susceptible to outer impact that will push back the tape guide inside the correction tape when the tape guide is pushed out during use, thereby affecting the use of the correction tape.

**[0004]** The present invention is conceived after thorough researches in view of the problems now existing in the currently available correction tape having a retractable tape guide.

### Disclosure of the Invention

#### Technical problems to be solved

**[0005]** Correction tape with a protective cap for the tape guide requires the cap to be opened and closed repeatedly during use, therefore such correction tape is not convenient to operate and the cap is susceptible to get lost, and further, the tape guide may be easily dam-

aged. Correction tape with a retractable tape guide has such retractable tape guide susceptible to be pushed back into the correction tape during use due to outer impact, thereby affecting the use of the correction tape.

#### Technical solutions

**[0006]** An object of the present invention is to provide a correction tape having a tape guide capable of self-locking after being pushed out. In other words, when the tape guide is pushed out and when the tape is applied, the tape guide will not be pushed back into the correction tape due to pressure on the tape guide.

**[0007]** To achieve the above object, the present invention has the following technical solutions:

A correction tape having a tape guide capable of self-locking after being pushed out, comprising a main body; the main body comprises a housing, a tape, a rolling application mechanism, a control element and a movable element; the movable element comprises the tape guide; the tape and the rolling application mechanism are provided inside the housing; the tape extends across a frontal part of the tape guide and winds around the rolling application mechanism; the control element controls movement of the movable element; a position limiting slot is provided on the movable element at an end of the movable element distal from the tape guide; the housing is provided with a guiding slot corresponding to the position limiting slot; the control element comprises a motion transmission element; the motion transmission element comprises a first slider 41 passing through firstly the guiding slot and then the position limiting slot, or comprises a second slider inserted into the guiding slot, a third slider inserted into the position limiting slot, and a triangular sliding piece; the second slider and the third slider are connected with the triangular sliding piece for motion transmission; two ends of the position limiting slot are an initial end and a stop end respectively; two ends of the guiding slot are an extension end and a retraction end respectively; when a corresponding slider on the motion transmission element is positioned at the initial end and the extension end simultaneously, the tape guide is completely retracted into the housing; when the corresponding slider on the motion transmission element is positioned at the stop end and the retraction end simultaneously, the tape guide is completely extended out of the housing.

**[0008]** The position limiting slot and the guiding slot are each being a straight slot, a curved slot or a compound slot; the compound slot is a combination of slot sections in communication with one another; the slot sections include at least two different shapes.

**[0009]** When the guiding slot is a curved slot, the retraction end is positioned at a side of the guiding slot near to the tape guide, and the extension end is positioned at a side of the guiding slot distal from the tape guide; when the position limiting slot is a compound slot, the compound slot comprises a first slot section and a second

slot section in communication with one another, wherein the first slot section is a first inclined straight slot; the second slot second is a vertical straight slot or a second inclined straight slot, the stop end is provided in the first slot, and the stop end is a closed end for stopping and position limiting; a range of movement allowed in the guiding slot corresponds to a range of movement between the completely extended position and completely retracted position of the tape guide.

**[0010]** A positioning protrusion is provided respectively on a side wall of the guiding slot at a position near to the extension end and/or at a position near to the retraction end.

**[0011]** The control element also comprises an operating portion; the operating portion is fixedly connected with the first slider or the second slider.

**[0012]** The operating portion is a rotary knob; the rotary knob has a shape of a circular cap; one end of the first slider or one end of the second slider is connected to an inner side wall of the rotary knob at a position proximal to a periphery thereof; or when the operating portion is an adjustment rod, one end of the adjustment rod is connected to said one end of the first slider or said one end of the second slider, another end of the adjustment rod is rotatably connected with the body; or when the operating portion is a push button connected with the first slider or the second slider, a diameter of the push button is larger than a slot width of the guiding slot; two opposite side walls of the push button are supported at slot walls of the guiding slot.

**[0013]** When the position limiting slot is a compound slot, the position limiting slot comprises a first slot section, a second slot section and a third slot section arranged in sequence and in communication with one another; the first slot section is a horizontal straight slot; the second slot section is a second inclined straight slot, and the third slot section is a vertical straight slot; the stop end is provided in the first slot section, and the initial end is provided in the third slot section.

**[0014]** When the guiding slot is a curved slot, an arc defined by the guiding slot has a central angle greater than or equal to 90 degrees.

**[0015]** The movable element is an elongated flattened piece, and is mounted inside the housing; with reference to a central axis along a lengthwise direction of the movable element after the correction tape is placed vertically where a lengthwise direction of the correction tape is parallel to a level ground, the position limiting slot is a vertical straight slot, and the stop end provided in this vertical straight slot coincides or is positioned higher than a horizontal level defined by the central axis, and the retraction end of the guiding slot correspondingly coincides or is positioned higher than the horizontal level defined by the central axis; a positioning protrusion is provided on a side wall of the position limiting slot at a position near to the stop end.

**[0016]** When the guiding slot is a compound slot, the guiding slot comprises a first guiding slot section and a

second guiding slot section in communication with each other; the first guiding slot section is a first straight slot, the second guiding slot section is a second straight slot; an included angle is formed between the first guiding slot section and the second guiding slot section.

**[0017]** When the guiding slot is a horizontal straight slot, the control element also comprises a push button being the operating portion; the triangular sliding piece comprises a first end, a second end and a third end; the first end is rotatably connected with an end of the movable element distal from the tape guide; the third slider is fixed connected to the second end; the triangular sliding piece is provided with an intermediate slot; one end of the intermediate slot is oriented towards the first end, and another end of the intermediate slot is oriented towards a direction which is biased with respect to a line connecting the first end and the second end; the second slider is inserted firstly into the guiding slot and then into the intermediate slot.

**[0018]** A correction tape having a tape guide capable of self-locking after being pushed out, comprising a main body; the main body comprises a housing, a tape, a rolling application mechanism, a control element and a movable element; the movable element comprises the tape guide; the tape and the rolling application mechanism are provided inside the housing; the tape extends across a frontal part of the tape guide and winds around the rolling application mechanism; the control element controls movement of the movable element; the control element comprises a fourth slider and an operating portion; a position limiting slot is provided at an end of the movable element distal from the tape guide; the housing is provided with a through hole corresponding to the position limiting slot; the through hole is mounted thereon a middle fitting body adapted to fit on the through hole; the fourth slider is connected to the middle fitting body at a position near a periphery of the middle fitting body; the operating portion and the middle fitting body are mounted together; the fourth slider is inserted into the position limiting slot.

**[0019]** Two ends of the position limiting slot are an initial end and a stop end respectively; when the fourth slider is positioned at the initial end, the tape guide is completely retracted into the housing; when the fourth slider is positioned at the stop end, the tape guide is completely extended out of the housing.

Beneficial effects of the present invention

**[0020]** By means of the technical solutions described above, the present invention during use has the first slider, third slider or fourth slider limited within the position limiting slot; by means of outer driving force, the movable element is driven to move, thereby achieving extension or retraction of the tape guide. Compared with the prior art, extension or retraction of the tape guide according to the present invention can be performed quickly and conveniently. Moreover, the tape guide is completed extended out during use, while the first slider is being limited

at the stop end of the position limiting slot, so during application of the tape, the stop end creates a locking force that prevents the tape guide from retracting back.

**[0021]** Besides, positioning protrusion(s) provided at side walls of the guiding slot or the position limiting slot reinforce the prevention of the first slider from moving back from the stop end back to the initial end (i.e. moving back from the retraction end to the extension end in the guiding slot) which leads to retraction of the tape guide affecting the application of the tape.

**[0022]** Further, the motion transmission element is provided to achieve extension and retraction of the tape guide by making use of motion transmission provided by leverage mechanism of the triangular configuration of components.

#### Brief Description of Drawings

#### **[0023]**

FIG. 1 is a schematic structural view of the correction tape according to embodiment 1 of the present invention.

FIG. 2 is a partially exploded view of the present invention according to embodiment 1, wherein the rotary knob is dismounted.

FIG. 3 is a partial schematic structural view of the correction tape according to embodiment 1 of the present invention (the first housing section omitted). FIG. 4 is a schematic structural view showing the cooperation between the movable element and the first slider according to embodiment 1 of the present invention.

FIG. 5 is a schematic structural view of the correction tape according to embodiment 2 of the present invention.

FIG. 6 is a schematic structural view of the movable element according to embodiment 2 of the present invention.

FIG. 7 is a partially exploded view of the present invention according to embodiment 3, wherein the rotary knob is dismounted.

FIG. 8 is a schematic structural view of the movable element according to embodiment 3 of the present invention.

FIG. 9 is a schematic structural view of the correction tape according to embodiment 4 of the present invention.

FIG. 10 is a schematic structural view of the movable element according to embodiment 4 of the present invention.

FIG. 11 is a schematic structural view of the correction tape according to embodiment 5 of the present invention.

FIG. 12 is a schematic structural view showing the triangular configuration of components according to embodiment 5 of the present invention.

FIG. 13 is a schematic exploded structural view

showing the triangular configuration of components according to embodiment 5 of the present invention. FIG. 14 is a partial schematic exploded view of the correction tape according to embodiment 6 of the present invention (the first housing section omitted). FIG. 15 is a partially exploded view of the present invention according to embodiment 6, wherein the rotary knob is dismounted.

#### 10 References in the figures

#### **[0024]**

- 1-housing
- 15 11-tape guide hole
- 12-first housing section
- 13-second housing section
- 14-positioning protrusion
- 15-through hole
- 20 16-guiding slot
- 161-first guiding slot section
- 162-second guiding slot section
- 17-middle fitting body
- 2-tape
- 25 3-rolling application mechanism
- 4-control element
- 41-first slider
- 42-rotary knob
- 43-adjustment rod
- 30 44-push button
- 45-triangular sliding piece
- 451-intermediate slot
- 452-second end
- 453-third end
- 35 455-first end
- 46-second slider
- 47-third slider
- 48-fourth slider
- 5-movable element
- 40 51-tape guide
- 52-drive end
- 53-position limiting slot
- 531-first slot section
- 532-second slot section
- 45 533-third slot section
- 54-central axis

#### Best Mode for Carrying out the Invention

50 **[0025]** In order to further explain the technical solutions of the present invention, the present invention will be described in detail below with reference to some embodiments.

55 **[0026]** A correction tape having a tape guide capable of self-locking after being pushed out is shown in FIGs. 1-4, comprising a main body; the main body comprises a housing 1, a tape 2, a rolling application mechanism 3, a control element 4 and a movable element 5; the mov-

able element 5 comprises a tape guide 51; the tape 2 and the rolling application mechanism 3 are provided inside the housing 1; the tape 2 extends across a frontal part of the tape guide 51 and winds around the rolling application mechanism 3; the control element 4 controls movement of the movable element 5, and in turns controls extension and retraction of the tape guide 51. In the present invention, the tape 2 and the rolling application mechanism 3 are prior arts and will not be described in detail herein.

#### Embodiment 1

**[0027]** In the embodiment, the control element 4 comprises a first slider 41 and an operating portion; the first slider 41 has a cylindrical shape and is a motion transmission element. In the embodiment, the operating portion is a rotary knob 42; the rotary knob 42 has a shape of a circular cap; the first slider 41 has a fixed end and a free end; the fixed end of the first slider is attached to the rotary knob 42 at a position proximal to a periphery thereof; the housing 1 has an elongated shape; one end of the housing 1 along a lengthwise direction thereof is provided with a tape guide opening 11; the housing 1 comprises a first housing section 12 and a second housing section 13 engageable with each other by the cooperation between grooves and protrusions; the rotary knob 42 is rotatably connected with the first housing section 12 at an end thereof distal from the tape guide opening 11; the rotary knob 42 is provided with anti-slip textured patterns along the periphery thereof to facilitate rotation.

**[0028]** The movable element 5 is an elongated flattened piece, mounted in between the first housing section 12 and the second housing section 13; the movable element 5 comprises a tape guide end and a drive end 52; the drive end 52 is provided with a position limiting slot 53 at a side wall thereof corresponding to the first housing section 12. With reference to a central axis 54 along a lengthwise direction of the movable element 5 after the correction tape is placed vertically where the lengthwise direction of the correction tape is parallel to a horizontal level, it is observed that the tape guide is positioned at a left side, the drive end 52 is positioned at a right side, the first slider 41 is positioned at a bottom side of the central axis 54, and an opposite side with respect to the bottom side of the central axis is an upper side. Directions as will be described below will be referenced according to the directional references as indicated above.

**[0029]** Portions of the movable element 5 above the central axis 54 are considered an upper zone, and portions of the movable element below the central axis 54 are considered a bottom zone. The position limiting slot 53 is positioned at a right side of the movable element 5. Also, the position limiting slot 53 is positioned within the bottom zone. The position limiting slot 53 is a compound slot comprising a first slot section 531 and a second slot section 532 in communication with each other. The first slot section 531 is provided at a side more near

to the tape guide 51, and the second slot section 532 is provided at a side more distal from the tape guide 51, in other words, the first slot section 531 is positioned at a left side of the second slot section 532. The first slot section 531 and the second slot section 532 are in communication with each other, and both have equal depths. The first slot section 531 is a first inclined straight slot that inclines leftward. The second slot section 532 is a vertical straight slot. Both the first slot section 531 and the second slot section 532 have widths corresponding to a diameter of the first slider 41. The first slot section 531 has a stop end, and this stop end is a closed end for stopping and position limiting. The second slot section 532 has an initial end. The stop end is positioned higher than the initial end, in other words, the initial end is located above the initial end. The stop end of the position limiting slot 53 is a round end preferably corresponding to the cylindrical shape of the first slider 41.

**[0030]** A right side of the first housing section 12 is provided with a guiding slot 16 corresponding to the position limiting slot 53. The guiding slot 16 is a curved slot comprising an extension end and a retraction end; the retraction end is positioned higher than the extension end, in other words, the retraction end is positioned above the extension end. When the first slider 41 is positioned at the initial end and the extension end simultaneously, the tape guide 51 is completely retracted into the housing 1. When the first slider 41 is positioned at the stop end and the retraction end simultaneously, the tape guide 51 is completely extended out of the housing 1. The guiding slot 16 is positioned at the bottom zone with respect to the central axis 54, in other words, both the extension end and the retraction end of the guiding slot 16 are positioned within the bottom zone with respect to the central axis 54. An arc of the guiding slot 16 (i.e. the curved slot) has a central angle less than 90 degrees. A range of movement allowed in the guiding slot 16 corresponds to a range of movement between the completely extended position and completely retracted position of the tape guide 51.

**[0031]** A positioning protrusion 14 is provided respectively on a side wall of the guiding slot 16 at a position near to the extension end and at a position near to the retraction end. The positioning protrusion 14 is made of plastic material and is slightly resilient.

**[0032]** The first slider 41 passes through firstly the guiding slot 16 and then the position limiting slot 53; by means of the guiding function of the guiding slot 16 and through the cooperation with the position limiting slot, the first slider 41 drives the movable element 5 to move and thus achieves extension and retraction of the tape guide 51. The first slider 41 is positioned or movable within the position limiting slot 53. Consider a condition where the tape guide 51 is completely retracted into the housing 1 as an initial condition; in such initial condition, the first slider 41 is positioned at the extension end of the guiding slot 16, and the free end of the first slider 41 is limited within the second slot section 532 of the position limiting

slot 53. The positioning protrusion 14 near the extension end can prevent the rotary knob 42 from driving and sliding the first slider 41 causing movement of the movable element 5 or even extension of the tape guide 51.

**[0033]** With reference to the positioning of the correction tape as shown in FIG. 1, and consider a condition of the tape guide 51 completely retracted in the housing 1 as an initial condition; when it is required to extend the tape guide, rotate the rotary knob 42 gently towards a clockwise direction; since the positioning protrusion 14 is slightly resilient, the first slider 41 can be easily disengaged from the position limited by the positioning protrusion 14; rotation of the rotary knob further drives the first slider 41 to move correspondingly within the guiding slot 16 under the guiding function of the guiding slot 16, and the first slider 41 in turns drives the movable element 5 to the left, and thus pushing out the tape guide 51 from the tape guide hole 11 until the tape guide 51 is completely pushed out; during the above described process, the first slider 41 is always positioned within the second slot section 532, and there is no corresponding change of position between the first slider 41 and the second slot section 532. When the rotary knob 42 is further rotated to the clockwise direction, the first slider 41 slides from the second slot section 532 to the first slot section 531, while there is no corresponding change of position between the movable element 5 and the guiding slot 16. Finally, the first slider 41 is positioned at the retraction end of the guiding slot 16, whereas the positioning protrusion 14 near to the retraction end prevents the first slider 41 from sliding downwardly driving the rotary knob 42 to rotate anti-clockwise. When applying the tape during use, the movable element 5 is subject to a rightward horizontal pressure force F1; during application of the tape, the first slider 41 contacts and presses against a wall of the first slot section 531 of the position limiting slot 53, wherein a contact surface between the first slider and the wall of the first slot section is an inclined surface or a curved surface at the round end of the closed end, therefore the contact surface is influenced by the inclination of the inclined straight slot (i.e. the first slot section 531), accordingly, the first slider 41 is subject to resilient force F2. When the contact surface is an inclined surface, F2 is perpendicular to the inclined surface; when the contact surface is a curved surface, F2 is oriented towards a center of circle of the curved surface at the round end. Therefore, along the clockwise direction along which the rotary knob 42 rotates, there is a circumferential force F3, and this F3 is a component force of F2 along a vertical direction. F3 can facilitate rotation of the rotary knob 42 along the clockwise direction, however, as a wall of the retraction end of the guiding slot 16 prevents the rotary knob 42 to further rotate clockwise, F3 here is considered is a locking force. In view of the above, during application of the tape by the present invention, the movable element 5 can self-lock, thereby achieving self-locking of the tape guide 51. After application of the tape is finished, rotate the rotary knob 42 towards an anti-clockwise direction

such that the first slider 41 first slides in the position limiting slot 53 from the first slot section 531 to the second slot section 532, and is limited within the second slot section 532; under the guiding function of the guiding slot 531, the first slider 41 will further slide in the guiding slot 16 from the retraction end to the extension end, and will eventually stop sliding under the limitation of a wall of the extension end, thereby retracting the tape guide 51 into the housing 1 through the tape guide hole 11 and thus resuming the initial condition.

**[0034]** Compared with the prior art, the present invention can be operated quickly and conveniently during extension and retraction of the tape guide. Also, when the tape guide 51 is completely extended, the first slider 41 is limited at the stop end of the position limiting slot 53; when applying the tape, the position limiting slot 53 has a locking force that prevents retraction of the first slider 41 during the course of applying the tape.

## Embodiment 2

**[0035]** As shown in FIGs. 5-6, embodiment 2 has the following differences compared with embodiment 1: structures of the position limiting slot 53 and structures of the operating portion.

**[0036]** As shown, the position limiting slot 53 is a compound slot, which comprises in a top-down sequence a first slot section 531, a second slot section 532 and a third slot section 533. The first slot section 531, the second slot section 532 and the third slot section 533 are in communication with one another, and all of them have equal depths. The first slot section 531 is a horizontal straight slot; the second slot section 532 is a second inclined straight slot inclined to left side; the third slot section 533 is a vertical straight slot; a stop end of the first slot section 531 is a closed end which can achieve stopping and position limiting.

**[0037]** In the current embodiment, the operating portion is an adjustment rod; one end of the adjustment rod is connected to the fixed end of the first slider 41; another end of the adjustment rod is rotatably connected to a supporting point on the first housing section 12. The supporting point is a center of circle of an arc defined by the curved slot (i.e. the guiding slot 16).

**[0038]** The highest point of the first slot section 531 is a closed end for stopping and position limiting. The first slider 41 has a cylindrical shape. The closed end of the position limiting slot 53 is a round end preferably corresponding to the cylindrical shape of the first slider 41.

**[0039]** When applying the tape, the first slider 41 is limited in the first slot section 531 (the horizontal straight slot) of the position limiting slot 53, and the movable element is subject to a rightward horizontal pressure force F1; during application of the tape, the first slider 41 contacts and presses against a wall of the first slot section 531 of the position limiting slot 53, wherein a contact surface between the first slider and the wall of the first slot section is a curved surface at the round end of the closed

end, accordingly, the first slider 41 is subject to resilient force F2, which is oriented towards a center of circle of the curved surface at the round end. Therefore, along the clockwise direction along which the adjustment rod 43 rotates, there is a circumferential force F3, and this F3 is a component force of F2 along a vertical direction. F3 can facilitate rotation of the adjustment rod 43 along the clockwise direction, however, as a wall of the retraction end of the guiding slot 16 prevents the rotary knob 42 to further rotate clockwise, F3 here is considered is a locking force. In the current embodiment, as the first slot section 531 is a horizontal straight slot, the resilience force of F2 is oriented more closely to a vertical direction than the resilience force F2 in embodiment 1. Therefore, the resilient force F2 has a greater component force F3 along the vertical direction, meaning a greater locking force.

**[0040]** In the current embodiment, the positioning slot 53 is provided with an inclined straight slot by means of which self-locking can be achieved. The self-locking as achieved is more secured.

#### Embodiment 3

**[0041]** As shown in FIGs. 7-8, embodiment 3 has the following differences compared with embodiment 1: structures of the position limiting slot 53 and structures of the guiding slot 16.

**[0042]** In the current embodiment, the position limiting slot 53 is a straight slot, in particular, a vertical straight slot; a positioning protrusion 14 is provided at a side wall of the vertical straight slot near to the stop end of the vertical straight slot. The stop end of the vertical slot extends from the bottom zone of the movable element 5 up to the upper zone of the movable element 5. The guiding slot is a curved slot; an arc defined by the curved slot has a central angle less than 90 degrees; also, the retraction end of the guiding slot 16 extends to the upper zone of the movable element 5; the initial end of the vertical straight slot is provided within the bottom zone of the movable element 5.

**[0043]** When applying the tape, the first slider 41 is limited at the stop end of the vertical straight slot, such that a circumferential force F3 facilitating the rotary knob 42 to rotate clockwise is created during application of the tape. In here, F3 is considered a locking force.

**[0044]** It should be note that, the central angle of an arc defined by the curved slot can also be equal to 90 degrees.

#### Embodiment 4

**[0045]** As shown in Figs. 9-10, embodiment 4 has the following differences compared to embodiment 1: structures of the guiding slot 16 and structures of the operating portion.

**[0046]** The guiding slot is a compound slot, comprising a first guiding slot section 161 and a second guiding slot

section 162 in communication with each other. The first guiding slot section 161 is an inclined straight slot (a first straight slot), and the second guiding slot section 162 is a horizontal straight slot (a second straight slot); an included angle is formed between the first guiding slot section 161 and the second guiding slot section 162. A range of movement allowed in the horizontal straight slot corresponds to a range of movement between the completely extended position and completely retracted position of the tape guide 51. In the current embodiment, the operating portion is a push button 44. The push button 44 is connected with the fixed end of the first slider 41; a diameter of the push button 44 is larger than a slot width of the guiding slot 16; two opposite side walls of the push button 44 are supported at slot walls of the guiding slot 16. In the current embodiment, a positioning protrusion for position limiting may be provided on the guiding slot 16 at a position near the extension end or at a position near the retraction end.

#### Embodiment 5

**[0047]** As shown in FIGs. 11-13, embodiment 5 has the following differences compared with embodiment 4: structures of the guiding slot, structures of the control element 4 and structures of the position limiting slot 53.

**[0048]** The guiding slot 16 is a horizontal straight slot; the position limiting slot 53 is an inclined straight slot inclined to the left. The stop end of the inclined straight slot extends from the bottom zone of the movable element 5 to the upper zone of the movable element 5. The initial end of the inclined straight slot is positioned within the bottom zone of the movable element 5. The control element 4 comprises a push button 44 and a motion transmission element. A portion of the drive end 52 the movable element 5 near a right periphery of the drive end 52 is provided with a trough for movement of the motion transmission element.

**[0049]** In the current embodiment, the motion transmission element comprises a triangular sliding piece 45, a second slider 46, and a third slider 47. The push button 44 is fixedly connected with one end of the second slider 46; the triangular sliding piece 45 has a triangular shape and comprises a first end 455, a second end 452 and a third end 453. The triangular sliding piece 45 is rotatably connected with the movable element 5 via the first end 455, and is limited in the trough. The third slider 47 has a fixed end and a free end; a fixed end of the third slider 47 is connected with the second end 452. The triangular sliding piece 45 is also provided with an inclined intermediate slot 451; one end of the intermediate slot 451 is oriented towards the first end 455, and another end of the intermediate slot 451 is oriented towards a direction which is biased with respect to a line connecting the first end 455 and the second end 452, in other words, the intermediate slot 451 does not coincide with the line connecting the first end 455 and the second end 452. Preferably, said another end of the intermediate slot 451 is

oriented to the third end 453.

**[0050]** The second slider 46 is inserted firstly into the guiding slot 16 and then into the intermediate slot 451; the free end of the third slider 47 is inserted into the position limiting slot 53.

**[0051]** The second slider 46 move within the trough under the guiding function of the guiding slot 16; movement of the second slider 46 in the trough drives the triangular sliding piece 45 to move, which in turns drives the third slider 47 to slide within the position limiting slot 53; movement of the third slider 47 drives the movable element 5 to move, thereby achieving extension and retraction of the tape guide 51.

**[0052]** In the current embodiment, leverage mechanism of the triangular sliding piece 45 is employed for achieving extension and retraction of the tape guide 51.

#### Embodiment 6

**[0053]** As shown in FIGs. 14-15, embodiment 6 has the following differences compared with embodiment 3: structures of the rotary knob 42, structures of the position limiting slot 53 and structures of the first housing section 12. In the current embodiment, the guiding slot is not provided. In the current embodiment, a fourth slider 48 as will be described below is equivalent to the first slider 41 described in embodiment 3.

**[0054]** The first housing section 12 is provided with a through hole 15 corresponding to the position limiting slot 53; the through hole is mounted thereon a middle fitting body; the middle fitting body 17 is adapted to fit on the through hole 15 so as to seal the through hole 15.

**[0055]** The rotary knob 42 is a circular cap. The rotary knob 42 and the middle fitting body 17 are fitted together by means of fastening mechanism. A fixed end of the fourth slider 48 is connected to the middle fitting body 17 at a position near a periphery of the middle fitting body 17.

**[0056]** The position limiting slot 53 is a vertical straight slot; a positioning protrusion 14 is provided at a stop end of the vertical straight slot.

**[0057]** During use, rotation of the rotary knob 42 drives the rotation of the middle fitting body 17 and the fourth slider 48; the fourth slider 48 is limited within the position limiting slot 53; the fourth slider 48 drives the movable element 5 to move.

**[0058]** It should be understood that, the analysis regarding the locking force, and regarding the movements of the first slider 41, the second slider 46, the third slider 47 and the fourth slider 48 can be obtained basic knowledge of physics known to a person skilled in the art, therefore, these analysis are omitted in some embodiments described above. Moreover, the movable element and the tape guide can be connected integrally, or can be connected by means of fastening components.

**[0059]** The embodiments described above and the figures as illustrated are not intended to limit the forms and types of the present invention. Any changes or modifications appropriately made by a person skilled in this field

of art should also be considered falling within the scope of protection of the present invention.

#### 5 Claims

1. A correction tape having a tape guide (51) capable of self-locking after being pushed out, comprising a main body; the main body comprises a housing (1), a tape (2), a rolling application mechanism (3), a control element (4) and a movable element (5); the movable element (5) comprises the tape guide (51); the tape (2) and the rolling application mechanism (3) are provided inside the housing (1); the tape (2) extends across a frontal part of the tape guide (51) and winds around the rolling application mechanism (3); the control element (4) controls movement of the movable element (5); **characterized in that:** a position limiting slot (53) is provided on the movable element (5) at an end of the movable element (5) distal from the tape guide (51); the housing (1) is provided with a guiding slot (16) corresponding to the position limiting slot (53); the control element (4) comprises a motion transmission element; the motion transmission element comprises a first slider (41) passing through firstly the guiding slot (16) and then the position limiting slot (53), or comprises a second slider (46) inserted into the guiding slot (16), a third slider (47) inserted into the position limiting slot (53), and a triangular sliding piece (45); the second slider (46) and the third slider (47) are connected with the triangular sliding piece (45) for motion transmission; two ends of the position limiting slot (53) are an initial end and a stop end respectively; two ends of the guiding slot (16) are an extension end and a retraction end respectively; when a corresponding slider (41/46/47) on the motion transmission element is positioned at the initial end and the extension end simultaneously, the tape guide (51) is completely retracted into the housing (1); when the corresponding slider (41/46/47) on the motion transmission element is positioned at the stop end and the retraction end simultaneously, the tape guide (51) is completely extended out of the housing (1); the position limiting slot (53) and the guiding slot (16) are each being a straight slot, a curved slot or a compound slot; the compound slot is a combination of slot sections in communication with one another; the slot sections include at least two different shapes.
2. The correction tape of claim 1, wherein the guiding slot (16) is a curved slot, the retraction end is positioned at a side of the guiding slot (16) near to the tape guide (51), and the extension end is positioned at a side of the guiding slot (16) distal from the tape guide (51); the position limiting slot (53) is a compound slot, the compound slot comprises a first slot section (531) and a second slot section (532) in com-



munication with one another, wherein the first slot section (531) is a first inclined straight slot; the second slot section (532) is a vertical straight slot or a second inclined straight slot, the stop end is provided in the first slot section (531), and the stop end is a closed end for stopping and position limiting; a range of movement allowed in the guiding slot (16) corresponds to a range of movement between a completely extended position and a completely retracted position of the tape guide (51).

3. The correction tape of claim 2, wherein a positioning protrusion (14) is provided respectively on a side wall of the guiding slot (16) at a position near to the extension end and/or at a position near to the retraction end.
4. The correction tape of claim 2, wherein the control element (4) also comprises an operating portion; the operating portion is fixedly connected with the first slider (41) or the second slider (46); the operating portion is a rotary knob (42); the rotary knob (42) has a shape of a circular cap; one end of the first slider (41) or one end of the second slider (46) is connected to an inner side wall of the rotary knob (42) at a position proximal to a periphery thereof; or the operating portion is an adjustment rod (43), one end of the adjustment rod (43) is connected to said one end of the first slider (41) or said one end of the second slider (46), another end of the adjustment rod (43) is rotatably connected with the main body; or the operating portion is a push button (44) connected with the first slider (41) or the second slider (46), a diameter of the push button (44) is larger than a slot width of the guiding slot (16); two opposite side walls of the push button (44) are supported at slot walls of the guiding slot (16).
5. The correction tape of claim 1, wherein the position limiting slot (53) is a compound slot, the position limiting slot (53) comprises a first slot section (531), a second slot section (532) and a third slot section (533) arranged in sequence and in communication with one another; the first slot section (531) is a horizontal straight slot; the second slot section (532) is a second inclined straight slot, and the third slot section (533) is a vertical straight slot; the stop end is provided in the first slot section (531), and the initial end is provided in the third slot section (533).
6. The correction tape of claim 1, wherein the guiding slot (16) is a curved slot, an arc defined by the guiding slot (16) has a central angle greater than or equal to 90 degrees.
7. The correction tape of claim 6, wherein the movable element (5) is an elongated flattened piece, and is mounted inside the housing (1); with reference to a

central axis (54) along a lengthwise direction of the movable element (5) after the correction tape is placed vertically where a lengthwise direction of the correction tape is parallel to a level ground, the position limiting slot (53) is a vertical straight slot, and the stop end provided in this vertical straight slot coincides or is positioned higher than a horizontal level defined by the central axis (54), and the retraction end of the guiding slot (16) correspondingly coincides or is positioned higher than the horizontal level defined by the central axis (54); a positioning protrusion (14) is provided on a side wall of the position limiting slot (53) at a position near to the stop end.

8. The correction tape of claim 1, wherein the guiding slot (16) is a compound slot, the guiding slot (16) comprises a first guiding slot section (161) and a second guiding slot section (162) in communication with each other; the first guiding slot section (161) is a first straight slot, the second guiding slot section (162) is a second straight slot; an included angle is formed between the first guiding slot section (161) and the second guiding slot section (162).
9. The correction tape of claim 1, wherein the guiding slot (16) is a horizontal straight slot, the control element (4) also comprises a push button (44) being an operating portion; the triangular sliding piece (45) comprises a first end (455), a second end (452) and a third end (453); the first end (455) is rotatably connected with an end of the movable element (5) distal from the tape guide (51); the third slider (47) is fixedly connected to the second end (452); the triangular sliding piece (45) is provided with an intermediate slot (451); one end of the intermediate slot (451) is oriented towards the first end (455), and another end of the intermediate slot (451) is oriented towards a direction which is biased with respect to a line connecting the first end (455) and the second end (452); the second slider (46) is inserted firstly into the guiding slot (16) and then into the intermediate slot (451).
10. A correction tape having a tape guide (51) capable of self-locking after being pushed out, comprising a main body; the main body comprises a housing (1), a tape (2), a rolling application mechanism (3), a control element (4) and a movable element (5); the movable element (5) comprises the tape guide (51); the tape (2) and the rolling application mechanism (3) are provided inside the housing (1); the tape (2) extends across a frontal part of the tape guide (51) and winds around the rolling application mechanism (3); the control element (4) controls movement of the movable element (5); **characterized in that:** the control element (4) comprises a fourth slider (48) and an operating portion; a position limiting slot (53) is provided at an end of the movable element (5) distal from the tape guide (51); the housing (1) is provided

with a through hole (15) corresponding to the position limiting slot (53); the through hole (15) is mounted thereon a middle fitting body (17) adapted to fit on the through hole; the fourth slider (48) is connected to the middle fitting body (17) at a position near a periphery of the middle fitting body (17); the operating portion and the middle fitting body (17) are mounted together; the fourth slider (48) is inserted into the position limiting slot (53);  
two ends of the position limiting slot (53) are an initial end and a stop end respectively; when the fourth slider (48) is positioned at the initial end, the tape guide (51) is completely retracted into the housing (1); when the fourth slider (48) is positioned at the stop end, the tape guide (51) is completely extended out of the housing (1).

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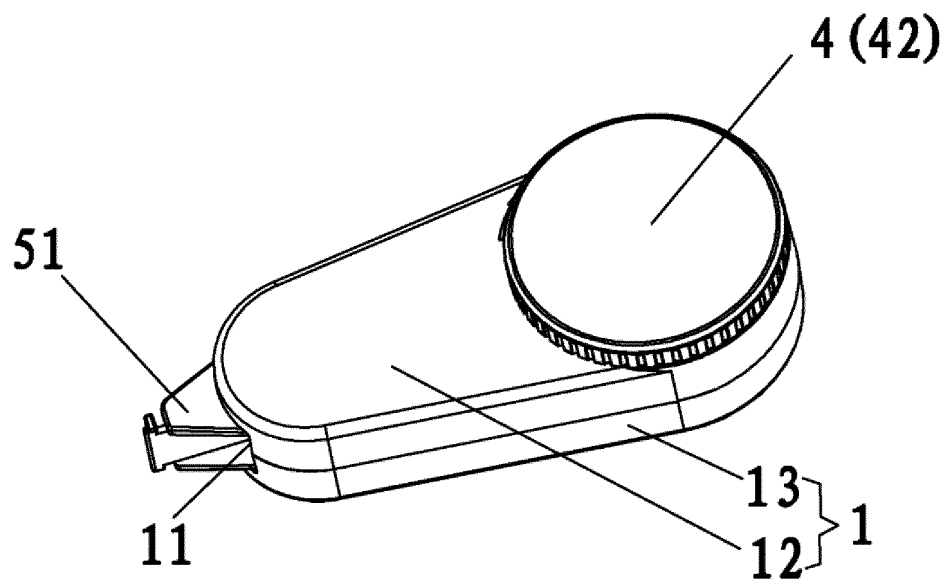


FIG.1

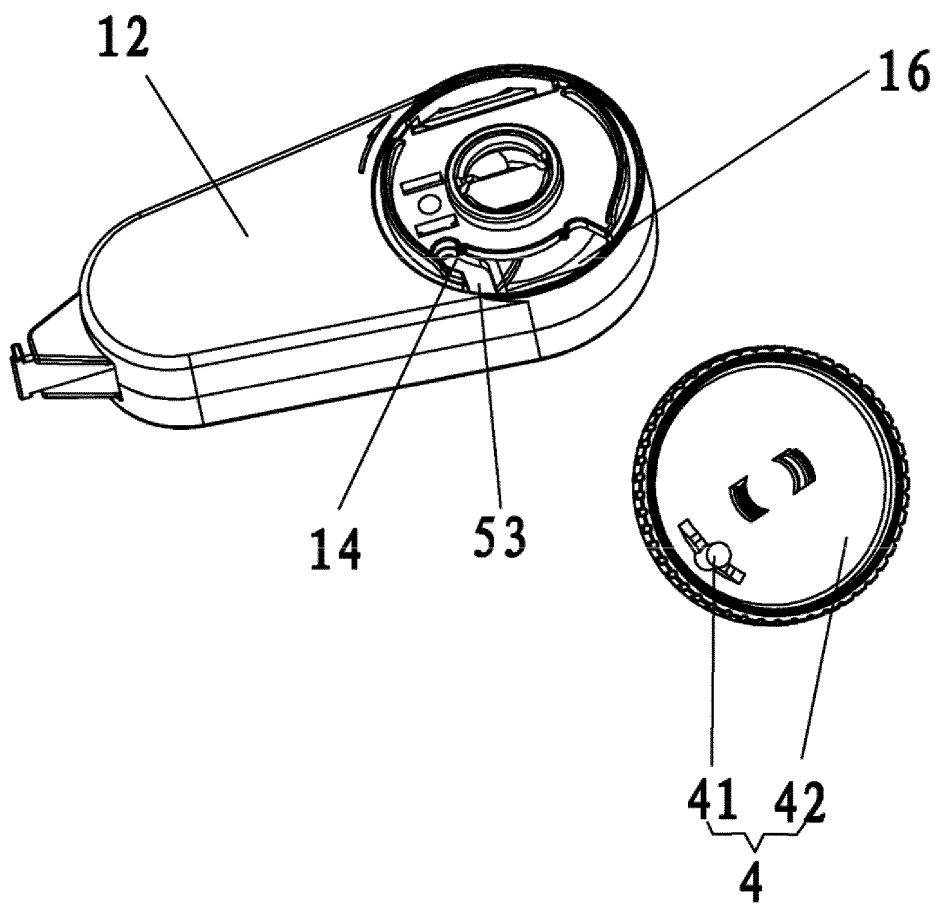


FIG.2

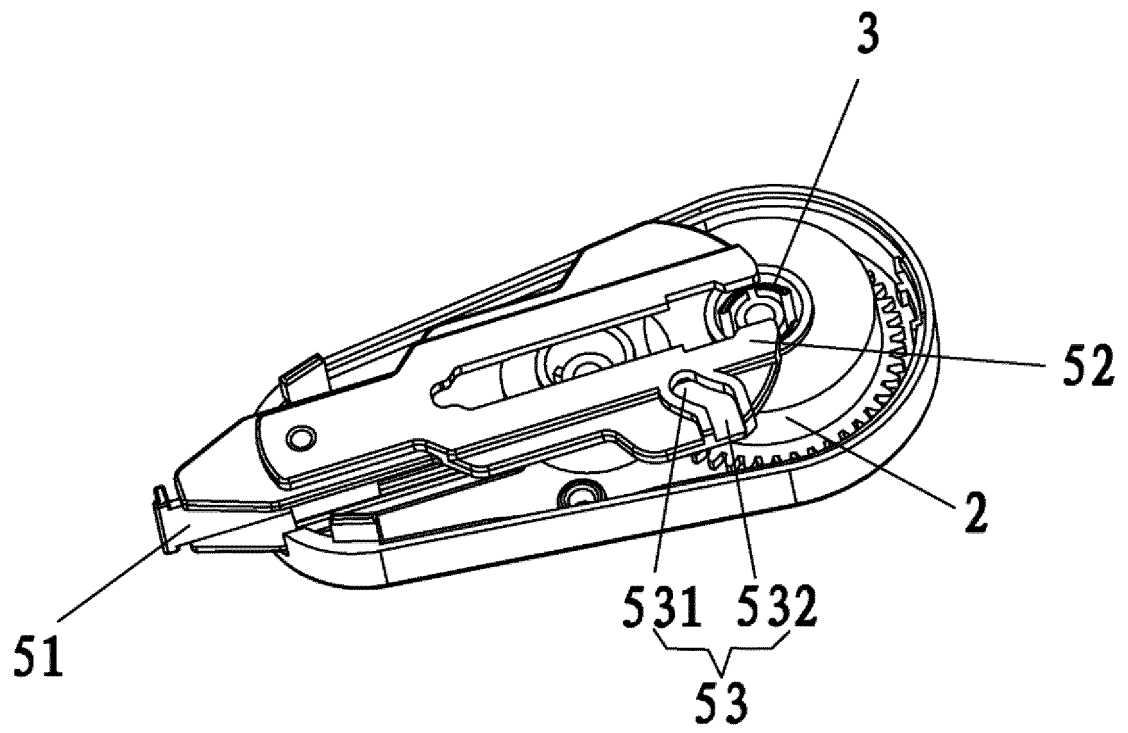


FIG. 3

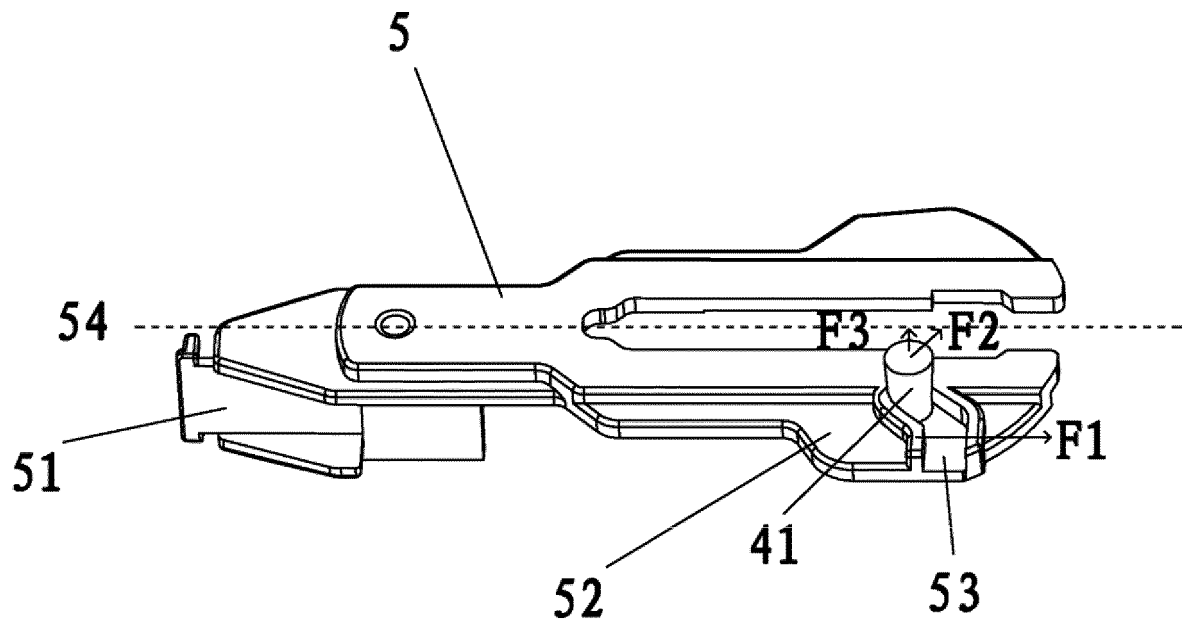


FIG. 4

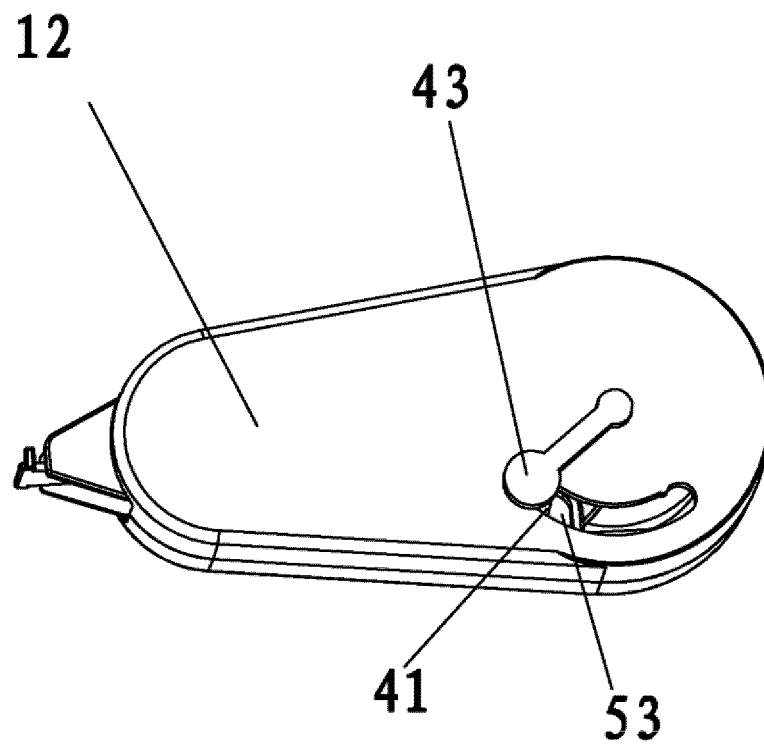


FIG. 5

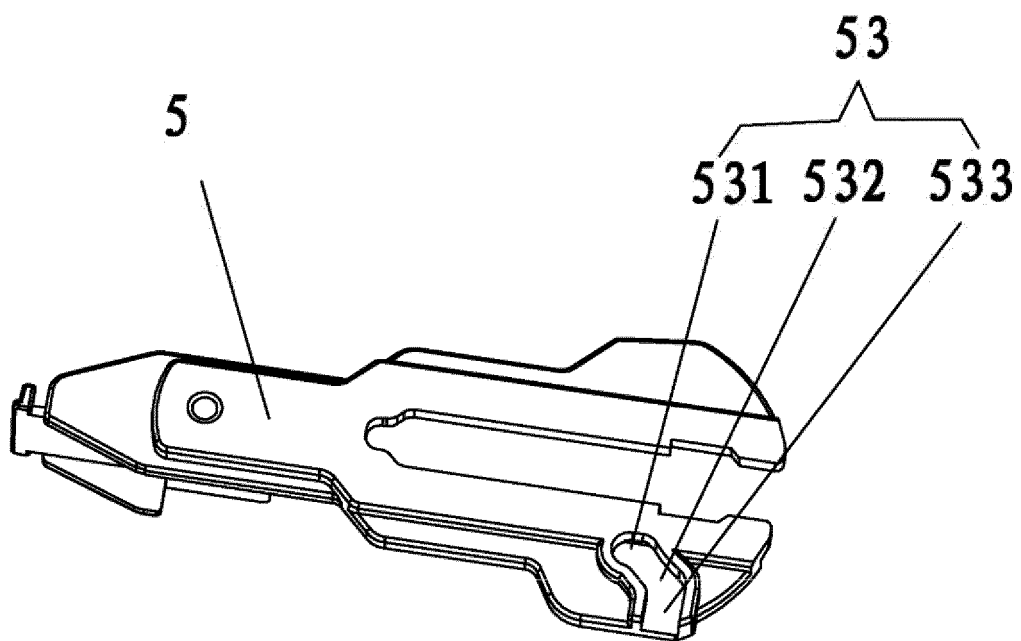


FIG. 6

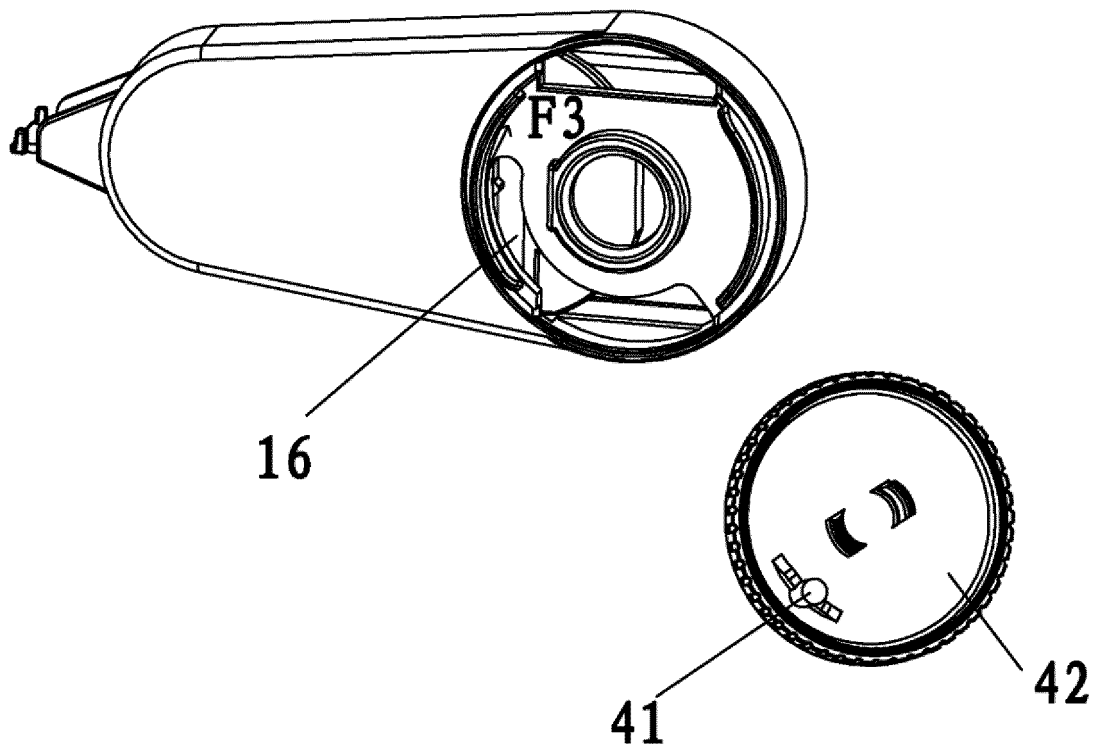


FIG.7

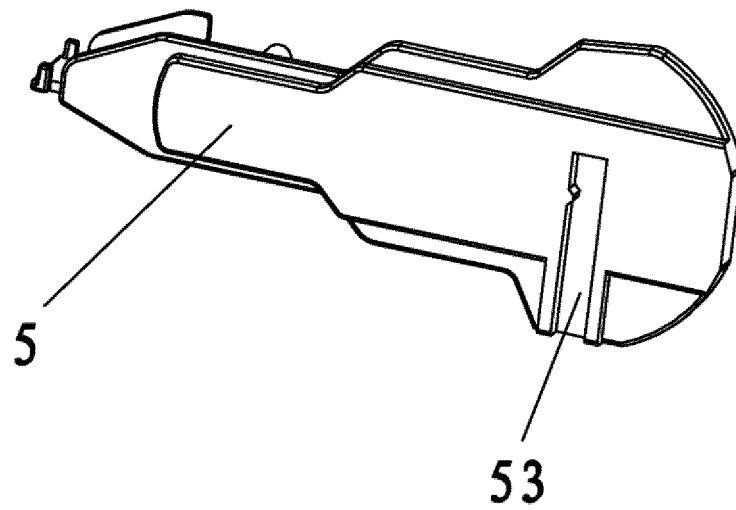


FIG.8

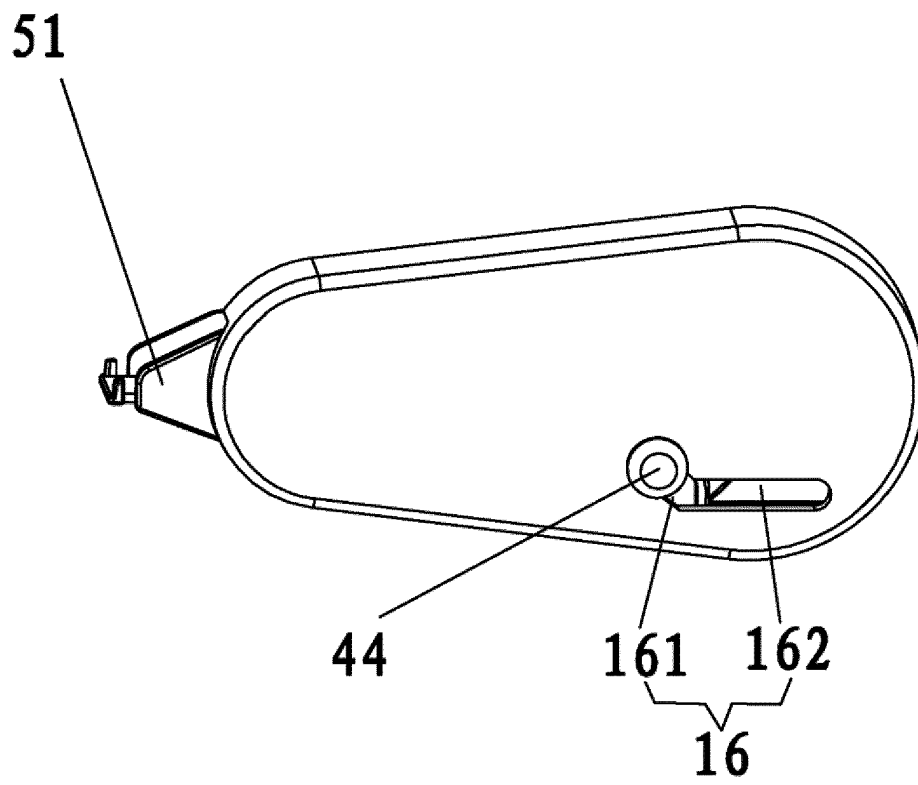


FIG. 9

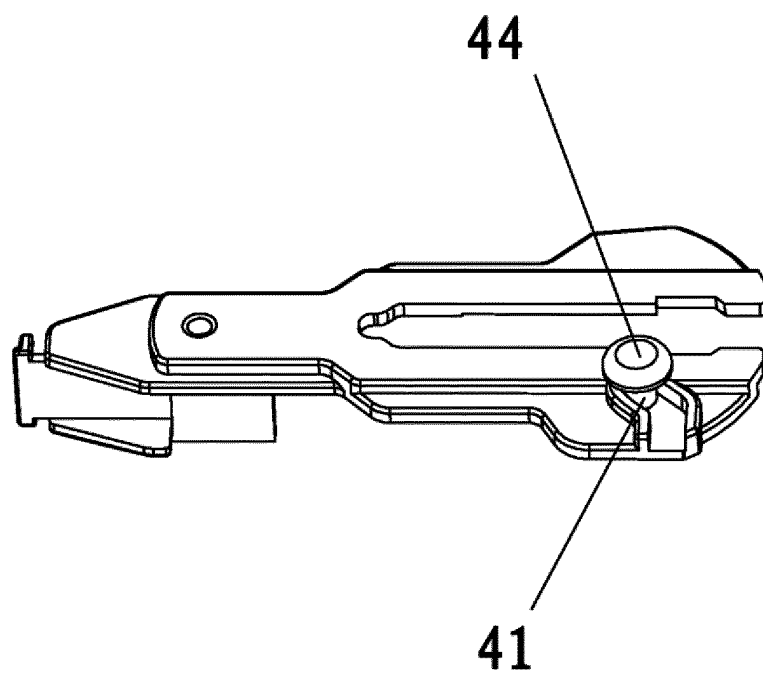


FIG. 10

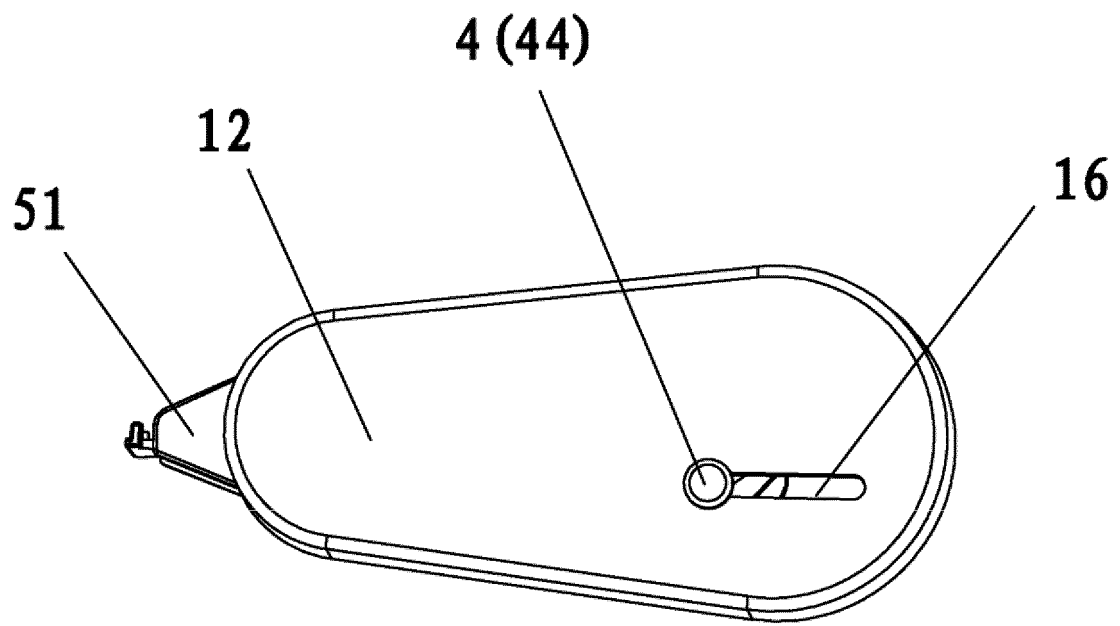


FIG. 11

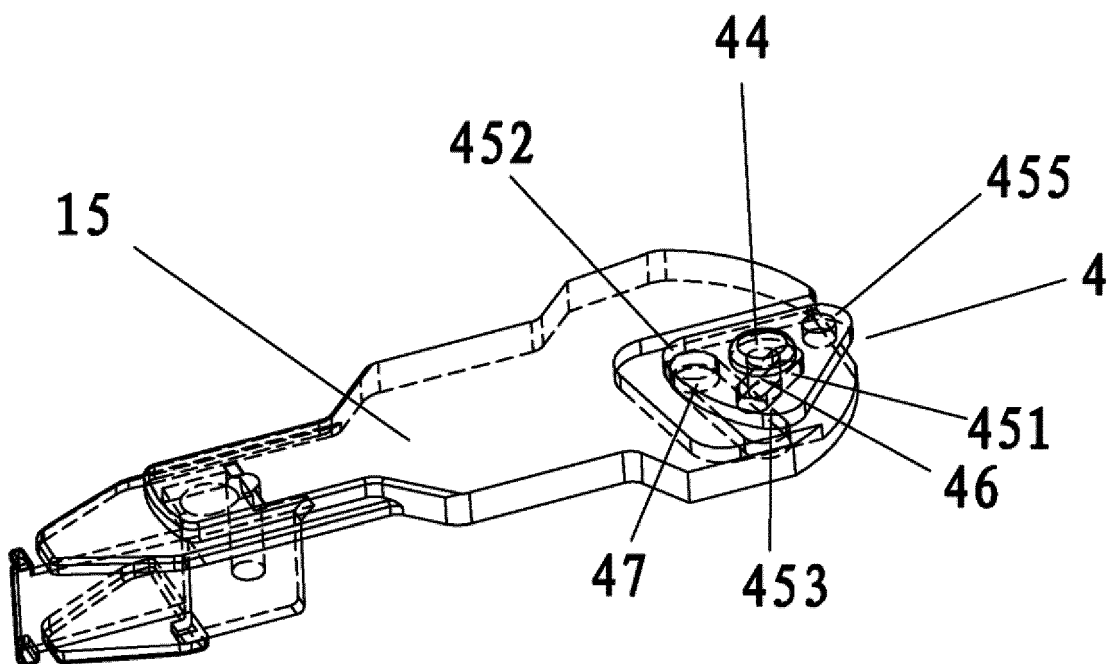


FIG. 12



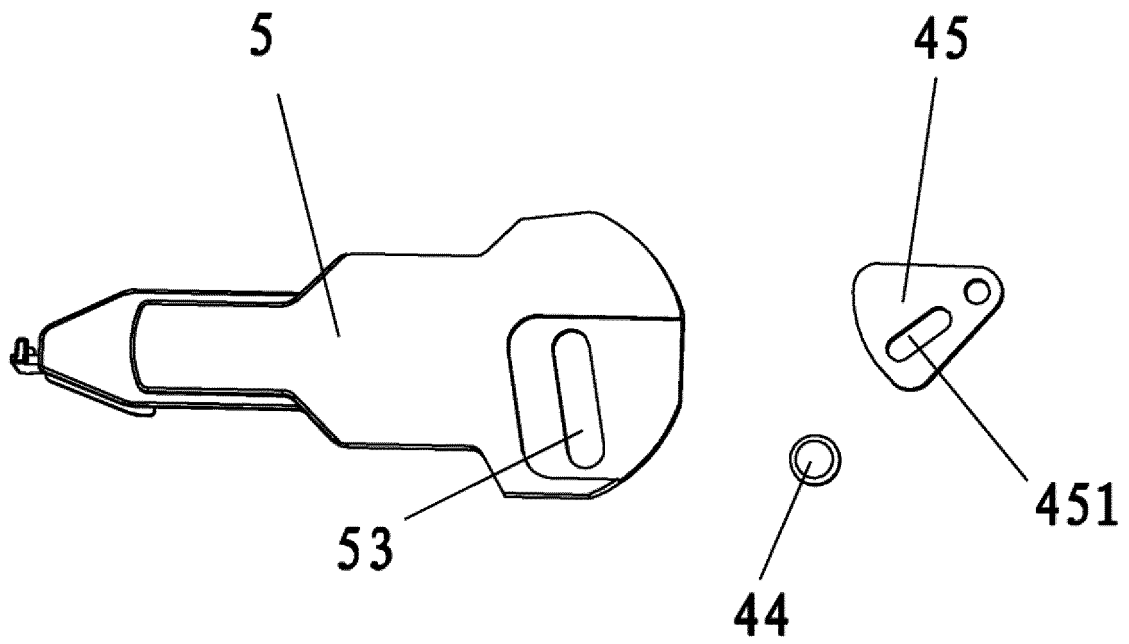


FIG. 13

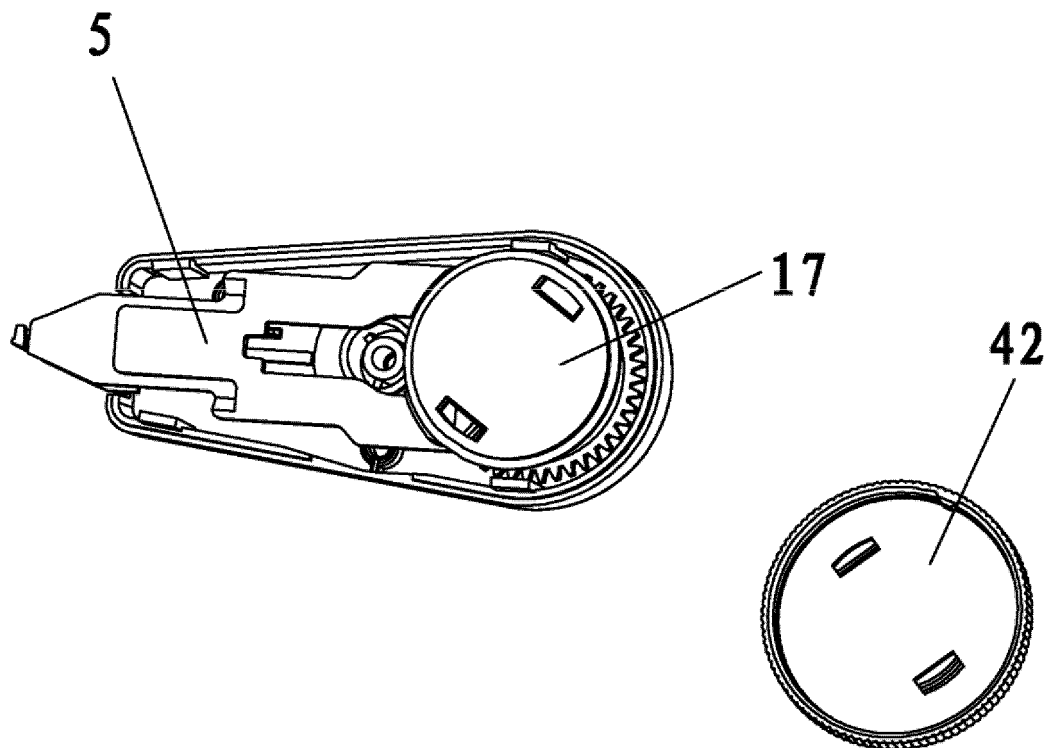


FIG. 14

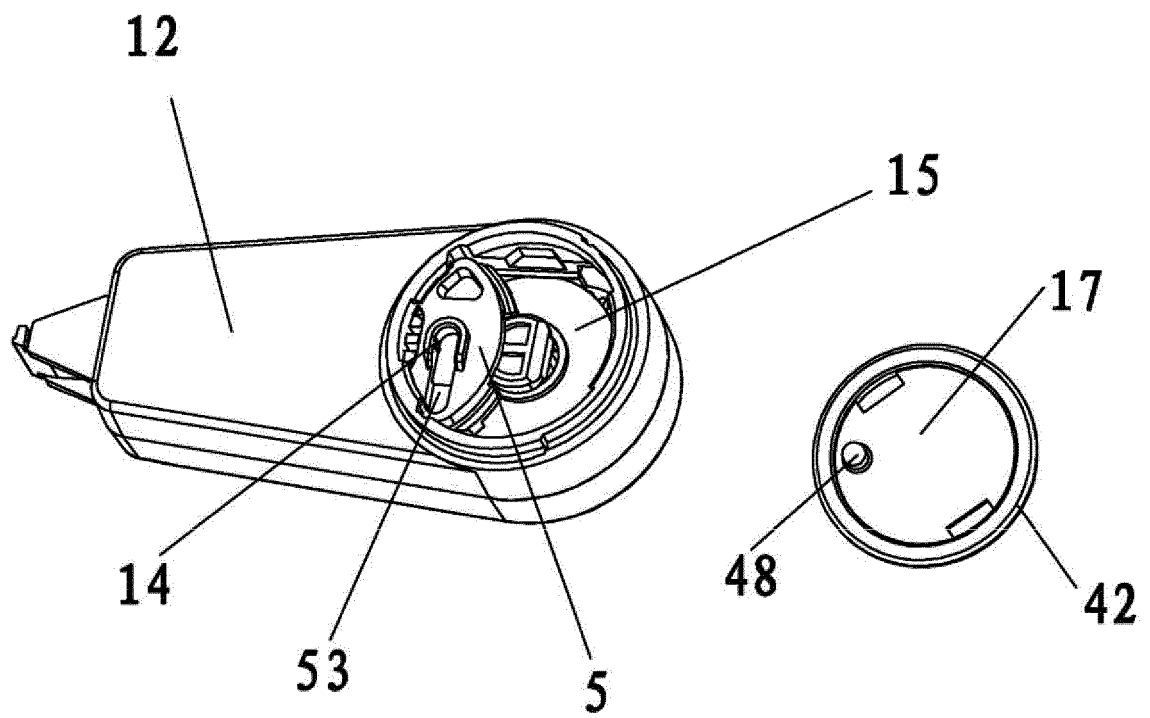


FIG. 15

## INTERNATIONAL SEARCH REPORT

International application No.  
PCT/CN2017/115531

## A. CLASSIFICATION OF SUBJECT MATTER

B43L 19/00 (2006.01) i; B65H 37/00 (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)

B43L; B65H

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)

WPI, EPODOC, CNPAT, CNKI: 一扬文化, 吴航, 修正带, 自锁, 推咀, 锁, 倒转, 止回, 压嘴, 槽, 滑块, 导向, 覆盖, 涂覆, correct+, belt, strip, tape, nozzle, slid+, block, limit+, groove?, guid+, slot?, cover, push, mouth, transfer+, coat+, film, refill+, +return+, revers+

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
PX	CN 106585226 A (YIYANG TWINGO STATIONERY CO., LTD.), 26 April 2017 (26.04.2017), claims 1-10, description, paragraphs [0057]-[0094], and figures 1-15	1-10
A	CN 205292051 U (CHEN, Mingxiong), 08 June 2016 (08.06.2016), description, paragraphs [0028]-[0037], and figures 1-7	1-10
A	CN 2538755 Y (XIAOXUEREN STATIONERY CO., LTD.), 05 March 2003 (05.03.2003), entire document	1-10
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A	CN 105059024 A (YIYANG TWINGO STATIONERY CO., LTD.), 18 November 2015 (18.11.2015), entire document	1-10
A	CN 204687662 U (YIYANG TWINGO STATIONERY CO., LTD.), 07 October 2015 (07.10.2015), entire document	1-10
A	JP 2001315493 A (TOMBOW PENCIL CO., LTD.), 13 November 2001 (13.11.2001), entire document	1-10

☒ Further documents are listed in the continuation of Box C.

☒ See patent family annex.

* Special categories of cited documents:	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"A" document defining the general state of the art which is not considered to be of particular relevance	
"E" earlier application or patent but published on or after the international filing date	"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"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
"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	"&" document member of the same patent family

Date of the actual completion of the international search 01 March 2018	Date of mailing of the international search report 15 March 2018
Name and mailing address of the ISA State Intellectual Property Office of the P. R. China No. 6, Xitucheng Road, Jimenqiao Haidian District, Beijing 100088, China Facsimile No. (86-10) 62019451	Authorized officer GAI, Lei Telephone No. (86-10) 010-53960876

## INTERNATIONAL SEARCH REPORT

International application No.  
PCT/CN2017/115531

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	JP 10181288 A (KOKUYO K.K.), 07 July 1998 (07.07.1998), entire document	1-10

Form PCT/ISA/210 (continuation of second sheet) (July 2009)

**INTERNATIONAL SEARCH REPORT**  
 Information on patent family members

 International application No.  
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CN 106585226 A	26 April 2017	None	
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JP 2001315493 A	13 November 2001	JP 4316771 B2	19 August 2009
JP 10181288 A	07 July 1998	JP 3039407 B2	08 May 2000

Form PCT/ISA/210 (patent family annex) (July 2009)

**REFERENCES CITED IN THE DESCRIPTION**

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