

STATIONERY TOOL WITH A PUSHBUTTON HAVING A PUSH-PROOF CAPABILITY

1. Field of the Invention

The present invention relates to a stationery tool, and more particularly to a stationery tool with a pushbutton having a push-proof capability.

2. Description of Related Art

A stationery tool, such as a correction tape, a thin film dispenser, a writing tool or a rubber, usually has an extension mechanism to push a working element to extend out of a body of the stationery tool. Accordingly, a user can carry out office work, such as thin film coating, writing or error erasing with the extending working element. One kind of conventional extension mechanism comprises a pushbutton to extend or retract a working element out of or into a body of a stationery tool reciprocatingly when the pushbutton is pushed.

However, the conventional pushbutton does not have a push-proof capability, so the conventional pushbutton will be pushed carelessly or unintentionally to cause the working element to extend out of a body arbitrarily. Particularly, a stationery tool having a pushbutton is often put in a briefcase or an outfit pocket, so the working element of the stationery tool may be unintentionally pushed to extend out of the body of the stationery tool due to being compressed. Consequently, the documents in the briefcase or the outfit pocket are easily dirtied to cause inconvenience in use or even irretrievable damage.

To overcome the shortcomings, the present invention tends to provide a stationery tool to mitigate or obviate the aforementioned problems.

1 The main objective of the invention is to provide a stationery tool with a
2 pushbutton having a push-proof capability to keep the pushbutton from being
3 pushed unintentionally.

4 The stationery tool has a body, a pushbutton, a working element, and a
5 push-proof device. The pushbutton is pushably and rotatably mounted on an end
6 of the body. The working element is mounted in the body and is connected to and
7 driven by the pushbutton. The push-proof device is mounted between the body
8 and the pushbutton and has a blocking protrusion and a blocking segment. The
9 blocking protrusion is disposed on the pushbutton. The blocking segment is
10 disposed on the body, selectively abuts the blocking protrusion and has a passage
11 defined in the blocking segment to allow the blocking protrusion to pass.

12 Accordingly, the pushbutton can be rotated to make the blocking
13 protrusion abut the blocking segment, such that the pushbutton can be kept from
14 being pushed relative to the body and can be kept in a locked condition.
15 Consequently, the working element can be kept from extending out of the body
16 unintentionally to dirty or damage other objects, such that the utility of the
17 stationery tool in accordance with the present is improved.

18 Other objects, advantages and novel features of the invention will
19 become more apparent from the following detailed description when taken in
20 conjunction with the accompanying drawings.

21 IN THE DRAWINGS

22 Fig. 1 is an exploded perspective view of a first embodiment of a
23 stationery tool in accordance with the present invention;

24 Fig. 2 is an enlarged perspective view of a pushbutton of the stationery

1 tool in Fig. 1;

2 Fig. 3 is an enlarged perspective view in partial section of the stationery
3 tool in Fig. 1;

4 Fig. 4 is an enlarged side view in partial section of the stationery tool in
5 Fig. 1;

6 Fig. 5 is an end view in partial section of the stationery tool along line
7 5-5 in Fig. 4;

8 Fig. 6 is an enlarged operational perspective view of the stationery tool
9 in Fig. 1 showing the pushbutton in an unlocked condition;

10 Fig. 7 is an enlarged operational perspective view of the stationery tool
11 in Fig. 1 showing the pushbutton in a locked condition;

12 Fig. 8 is a perspective view of a pushbutton of a second embodiment of a
13 stationery tool in accordance with the present invention;

14 Fig. 9 is an operational perspective view of the second embodiment of
15 the stationery tool in accordance with the present invention showing the
16 pushbutton in an unlocked condition;

17 Fig. 10 is a cross sectional end view of the stationery tool along the line
18 10-10 in Fig. 9 showing the pushbutton in an unlocked condition; and

19 Fig. 11 is an operational perspective view of the second embodiment of
20 the stationery tool in Fig. 9 showing the pushbutton in a locked condition.

21 A stationery tool in accordance with the present invention has a
22 pushbutton having a push-proof capability, may be a writing tool, a rubber or a
23 thin film dispenser and may be any stationery tool having a pushbutton for
24 pushing a working element out of a body for proceeding with office work. The

1 stationery tool comprises a body, a pushbutton, a working element and a
2 push-proof device. The pushbutton is pushably and rotatably mounted on an end
3 of the body. The working element is mounted in the body and is connected to and
4 driven by the pushbutton. When the pushbutton is pushed, the working element
5 extends out of the body to enable a user to proceed with office work. The
6 working element may be a refill, a rubber, a correction tape, a thin film
7 dispensing unit or the like. The body, the pushbutton and the working element
8 may have different shapes, structures and connections and may be conventional,
9 and therefore the detail descriptions about the body, the pushbutton and the
10 working element are omitted. A thin film dispenser serves as a figure example
11 for describing the present invention.

12 With reference to Figs. 1 to 5, the push-proof device is mounted between
13 a body 10 and a pushbutton 12 and comprises a blocking protrusion and a
14 blocking segment 30. The blocking protrusion is formed on the pushbutton 12.
15 The blocking segment 30 is formed on an inner surface of the body 10. The
16 blocking protrusion comprises at least one blocking tab 20, and preferably two
17 blocking tabs 20 are implemented. The blocking tabs 20 are formed respectively
18 on two ends of a diameter of the pushbutton 12. Each blocking tab 20 is axially
19 formed on and protrudes from the pushbutton 12 at an end that extends into the
20 body 10 and has a compressible elasticity relative to the pushbutton 12. Each
21 blocking tab 20 has a positioning rib 22 formed on an outer surface of the
22 blocking tab 20. The blocking segment 30 is formed on the inner surface of the
23 body 10 and comprises a blocking flange being perpendicular to the inner
24 surface of the body 10 and a passage defined in the blocking segment 30 to allow

1 the blocking protrusion to pass. The passage comprises at least one guiding
2 channel 32 defined through the blocking segment 30 and selectively aligning
3 respectively with the at least one blocking tab 20. Preferably, two guiding
4 channels 32 are implemented to fit with the number of the blocking tabs 20 and
5 are spaced from each other at 180° in curvature. In addition, the body 10 may
6 further have at least one positioning groove 34 formed in an inner surface of the
7 body 10. Preferably, two positioning grooves 34 are implemented to fit with the
8 number of the blocking tabs 20 and are formed in the inner surface of the body
9 10 at positions beside the passage. With reference to Fig. 5, the two positioning
10 grooves 34 are spaced from each other at 180° in curvature, and each positioning
11 groove 34 is spaced from an adjacent one of the guiding channels 32 at 90° in
12 curvature. In addition, the body 10 may further have at least one positioning
13 channel 36 formed in the inner surface of the body 10 and respectively
14 corresponding to the at least one guiding channel 32. Preferably, the at least one
15 positioning channel 36 respectively aligns and communicates with the at least
16 one guiding channel 32. Consequently, the positioning rib 22 on the at least one
17 blocking tab 20 respectively engages the at least one positioning channel 36
18 when the at least one blocking tab 20 respectively aligns with the at least one
19 guiding channel 32. Preferably, two positioning channels 36 are implemented to
20 fit with the numbers of the blocking tabs 20 and the guiding channels 32.

21 With such an arrangement, with reference to Figs. 1, 3, 5 and 6, when the
22 blocking tabs 20 on the pushbutton 12 align respectively with the guiding
23 channels 32 in the body 10, the pushbutton 12 is pushable. When the pushbutton
24 12 is pushed, the blocking tabs 20 can extend into the guiding channels 32, such

1 that the pushbutton 12 can be pushed to extend into the body 10 and to drive the
2 working element 14 to extend out of the body 10. Consequently, the stationery
3 tool can be applied to proceed with the desired office work. At this time, because
4 the blocking tabs 20 extend respectively into the guiding channels 32, the
5 pushbutton 12 can be kept from rotating relative to the body 10. In addition,
6 before the pushbutton 12 is pushed, the positioning ribs 22 on the blocking tabs
7 20 respectively engage the positioning channels 36. With the engagement
8 between the positioning ribs 22 and the positioning channels 36, a guiding effect
9 is provided to enable a user to push the pushbutton 12 smoothly, and the
10 pushbutton 12 can be kept from rotating relative to the body 10 arbitrarily.
11 Accordingly, the pushbutton 12 can be kept in the pushable condition stably.

12 To lock the pushbutton 12, with reference to Figs. 1, 5 and 7, the
13 pushbutton 12 is forced to rotate relative to the body 10, and the positioning ribs
14 22 are disengaged from the positioning channels 36 with the compressible
15 elasticity of the blocking tabs 20. After the pushbutton 12 is rotated by an angle
16 to make the blocking tabs 20 or the positioning ribs 22 face the blocking segment
17 30, the pushbutton 12 is not pushable and cannot be pushed to extend into the
18 body 10 due to the abutment between the blocking segment 30 and the blocking
19 tabs 20 or the positioning ribs 22. Consequently, the pushbutton 12 is locked.

20 With the pushbutton 12 being locked, the pushbutton 12 is not pushable and the
21 working element 14 will not extend out of the body 10 unintentionally, thereby
22 preventing the working element 14 from dirtying or damaging other objects.

23 In addition, when the pushbutton 12 is rotated relative to the body 10 by
24 a predetermined angle, such as 90° , the positioning ribs 22 on the blocking tab 20

1 will respectively engage the positioning grooves 34 in the body 10. Accordingly,
2 the pushbutton 12 can be held in the locked condition and will not be arbitrarily
3 rotated back to the unlocked condition where the blocking tabs 20 align with the
4 guiding channels 32. Thus, the pushbutton 12 can be prevented from being
5 unlocked unintentionally.

6 To unlock the pushbutton 12, the pushbutton 12 is rotated in reverse.
7 With the compressible elasticity of the blocking tabs 20, the blocking tabs 20 can
8 be compressed to disengage the positioning ribs 22 on the blocking tabs 20 from
9 the positioning grooves 34 and to make the pushbutton 12 rotatable relative to
10 the body 10. When the pushbutton 12 is rotated to a position where the blocking
11 tabs 20 align with the guiding channels 32, the pushbutton 12 is unlocked and
12 pushable so that the stationery tool is under the operation condition.
13 Alternatively, the pushbutton 12 can be unlocked by rotating the pushbutton 12
14 continuously in a single direction along which the pushbutton 12 can be rotated
15 to lock.

16 With reference to Figs. 8 to 10, in the second embodiment of the
17 push-proof device, the blocking protrusion comprises at least one blocking rib 50
18 formed on and protruding from the outer surface of the pushbutton 42. The
19 blocking segment 60 is formed on the end of the body 40, and a passage is
20 formed through the blocking segment 60 to allow the blocking rib 50 to pass the
21 blocking segment 60 and to extend into the body 40. The passage comprises at
22 least one guiding channel 62 axially defined in the end of and extending into the
23 body 40 and selectively aligning respectively with the at least one blocking rib
24 50.

1 With such an arrangement, while the pushbutton 42 is at a position
2 where the blocking rib 50 aligns with the guiding channel 62, the pushbutton 42
3 is pushable and can be pushed to extend into the body 40. When the pushbutton
4 42 is pushed, the blocking rib 50 extends into and slides relative to the guiding
5 channel 62 and the working element is driven to extend out of the body 40 to
6 proceed with the desired office work. In addition, the guiding channel 62 can
7 provide a limiting effect to the blocking rib 50 to keep the pushbutton 42 from
8 rotating relative to the body 40.

9 To lock the pushbutton 42, with reference to Figs. 10 and 11, the
10 pushbutton 42 is rotated relative to the body 40 to move the blocking rib 50 away
11 from the position where the blocking rib 50 aligns with the guiding channel 62.
12 Consequently, the blocking rib 50 will face and abut the blocking segment 60 on
13 the end of the body 40. With the abutment between the blocking rib 50 and the
14 blocking segment 60, the pushbutton 42 is not pushable and is locked.
15 Accordingly, the working element will not extend out of the body 40
16 unintentionally to dirty or damage other objects.

17 In addition, with reference to Figs. 8 to 10, the pushbutton 42 has a
18 positioning segment 52 axially formed on and protruding from an end of the
19 pushbutton 42 and having a thickness smaller than that of the pushbutton 42. At
20 least one positioning rib 54 is formed on the outer surface of the positioning
21 segment 52. The body 40 has at least one positioning groove 64 formed in the
22 inner surface of the body 40 and selectively and respectively engaging the at
23 least one positioning rib 54. Preferably, the number of the positioning rib 54, the
24 guiding channel 62 and the positioning groove 64 is one, respectively.

1 Furthermore, the body 40 may further have a positioning channel 66 formed in
2 the inner surface of the body 40 and selectively engaging the positioning rib 54.
3 The positioning groove 64 is spaced from the positioning channel 66 at 90° in
4 curvature. Accordingly, with the engagement of the positioning rib 54 with the
5 positioning channel 66 or the positioning groove 64, a force is necessary to
6 disengage the positioning rib 54 from the positioning channel 66 or the
7 positioning groove 64 for rotating the pushbutton 42 relative to the body 40.
8 Otherwise, the pushbutton 42 cannot be rotated relative to the body 40
9 arbitrarily.

10 When the pushbutton 42 is in the unlocked condition where the blocking
11 rib 50 aligns with the guiding channel 62, the positioning rib 54 engages the
12 positioning channel 66. With the engagement between the positioning rib 54 and
13 the positioning channel 66, the pushbutton 42 can be held in the unlocked
14 condition. When the pushbutton 42 is rotated by a predetermined angle to lock
15 the pushbutton 42, such as 90° as aforementioned, the positioning rib 54 engages
16 the positioning groove 64. With the engagement between the positioning rib 54
17 and the positioning groove 64, the pushbutton 42 can be held in the locked
18 condition. Accordingly, the pushbutton 42 is kept from rotating relative to the
19 body 40 arbitrarily, such that the conditions of the pushbutton 42 will not be
20 changed unintentionally. Moreover, because the positioning segment 52 has a
21 thickness smaller than that of the pushbutton 42, a compressible elasticity is
22 provided to the positioning segment 52 relative to the pushbutton 42. Thus, the
23 positioning rib 54 on the positioning segment 52 can engage and disengage from
24 the positioning groove 64 or the positioning channel 66 conveniently.

1 Even though numerous characteristics and advantages of the present
2 invention have been set forth in the foregoing description, together with details
3 of the structure and function of the invention, the disclosure is illustrative only,
4 and changes may be made in detail, especially in matters of shape, size, and
5 arrangement of parts within the principles of the invention to the full extent
6 indicated by the broad general meaning of the terms in which the appended
7 claims are expressed.

8

1 **CLAIMS:**

2 1. A stationery tool comprising:

3 a body (10) having an end;

4 a pushbutton (12) pushably and rotatably mounted on the end of the
5 body (10);

6 a working element (14) mounted in the body (10) and connected to and
7 driven by the pushbutton (12), characterized in that the stationery tool further
8 comprises:

9 a push-proof device mounted between the body (10) and the pushbutton
10 (12) and comprising:

11 a blocking protrusion disposed on the pushbutton (12); and

12 a blocking segment (30) disposed on the body (10), selectively
13 abutting the blocking protrusion and having a passage defined in the blocking
14 segment (30) to allow the blocking protrusion to pass.

15 2. The stationery tool as claimed in claim 1, wherein the blocking
16 protrusion comprises at least one blocking tab (20) axially formed on and
17 protruding from the pushbutton (12) at an end that extends into the body (10).

18 3. The stationery tool as claimed in claim 2, wherein the blocking
19 protrusion has two blocking tabs (20); and

20 the passage comprises two guiding channels (32) defined through the
21 blocking segment (30) and selectively aligning respectively with the blocking
22 tabs (20).

23 4. The stationery tool as claimed in claim 3, wherein each blocking tab
24 (20) has a positioning rib (22) formed on an outer surface of the blocking tab (20);

1 and

2 the body (10) has two positioning grooves (34) formed in an inner
3 surface of the body (10) at positions beside the passage and selectively and
4 respectively engaging the positioning ribs (22) on the blocking tabs (20).

5 5. The stationery tool as claimed in claim 4, wherein the blocking tabs
6 (20) are formed respectively on two ends of a diameter of the pushbutton (12);
7 and

8 the two guiding channels (32) are spaced from each other at 180° in
9 curvature.

10 6. The stationery tool as claimed in claim 5, wherein the two positioning
11 grooves (34) are spaced from each other at 180° in curvature; and

12 each positioning groove (34) is spaced from an adjacent one of the
13 guiding channels (32) at 90° in curvature.

14 7. The stationery tool as claimed in claim 6, wherein the body (10)
15 further has two positioning channels (36) formed in the inner surface of the body
16 (10) and respectively aligning and communicating with the guiding channels
17 (32); and

18 the positioning ribs (22) on the blocking tabs (20) respectively engage
19 the positioning channels (36) when the blocking tabs (20) respectively align with
20 the guiding channels (32).

21 8. The stationery tool as claimed in claim 7, wherein the blocking
22 segment (30) is formed on the inner surface of the body (10) and comprises a
23 blocking flange being perpendicular to the inner surface of the body (10).

24 9. The stationery tool as claimed in claim 2, wherein each one of the at

1 least one blocking tab (20) has a positioning rib (22) formed on an outer surface
2 of the blocking tab (20);

3 the passage comprises at least one guiding channel (32) defined through
4 the blocking segment (30) and selectively aligning respectively with the at least
5 one blocking tab (20); and

6 the body (10) has at least one positioning groove (34) formed in an inner
7 surface of the body (10) at a position beside the passage and selectively and
8 respectively engaging the positioning rib (22) on the at least one blocking tab
9 (20).

10 10. The stationery tool as claimed in claim 9, wherein the body (10)
11 further has at least one positioning channel (36) formed in the inner surface of
12 the body (10) and respectively aligning and communicating with the at least one
13 guiding channel (32); and

14 the positioning rib (22) on the at least one blocking tab (20) respectively
15 engage the at least one positioning channel (36) when the at least one blocking
16 tab (20) respectively aligns with the at least one guiding channel (32).

17 11. The stationery tool as claimed in claim 1, 9 or 10, wherein the
18 blocking segment (30) is formed on the inner surface of the body (10) and
19 comprises a blocking flange being perpendicular to the inner surface of the body
20 (10).

21 12. The stationery tool as claimed in claim 1, wherein the blocking
22 protrusion comprises at least one blocking rib (50) formed on and protruding
23 from an outer surface of the pushbutton (42); and

24 the blocking segment (60) is formed on the end of the body (40).

1 13. The stationery tool as claimed in claim 12, wherein the passage
2 comprises at least one guiding channel (62) axially defined in the end of and
3 extending inside the body (40) and selectively aligning respectively with the at
4 least one blocking rib (50).

5 14. The stationery tool as claimed in claim 12 or 13, wherein the
6 pushbutton (42) has a positioning segment (52) formed on and protruding from
7 an end of the pushbutton (42) and having a thickness smaller than that of the
8 pushbutton (42);

9 at least one positioning rib (54) is formed on an outer surface of the
10 positioning segment (52); and

11 the body (40) has at least one positioning groove (64) formed in an inner
12 surface of the body (40) and selectively and respectively engaging the at least
13 one positioning rib (54).

14 15. The stationery tool as claimed in claim 14, wherein

15 one positioning rib (54) is implemented on the pushbutton (42);

16 one positioning groove (64) is implemented in the inner surface of the
17 body (40);

18 the passage has one guiding channel (62); and

19 the body (40) further has a positioning channel (66) formed in the inner
20 surface of the body (40) and selectively engaging the positioning rib (54).

21 16. The stationery tool as claimed in claim 15, wherein the positioning
22 groove (64) is spaced from the positioning channel (66) at 90° in curvature.

23 17. The stationery tool as claimed in any one of claims 1 to 10, 12 and 13,
24 wherein the stationery tool is a writing tool.

1 18. The stationery tool as claimed in any one of claims 1 to 10, 12 and 13,
2 wherein the stationery tool is a rubber.

3 19. The stationery tool as claimed in any one of claims 1 to 10, 12 and 13,
4 wherein the stationery tool is a thin film dispenser.