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(19) **United States**(12) **Patent Application Publication****Jang et al.**(10) **Pub. No.: US 2016/0120392 A1**(43) **Pub. Date: May 5, 2016**(54) **TAPE CLEANER**(71) Applicant: **3M INNOVATIVE PROPERTIES COMPANY**, St. Paul, MN (US)(72) Inventors: **Moonkyoung Jang**, Hwaseong-si, Gyeonggi-do (KR); **Young-Sang Kim**, Yongin-city, Gyeonggi-do (KR)(21) Appl. No.: **14/895,281**(22) PCT Filed: **Jul. 1, 2014**(86) PCT No.: **PCT/US2014/045080**

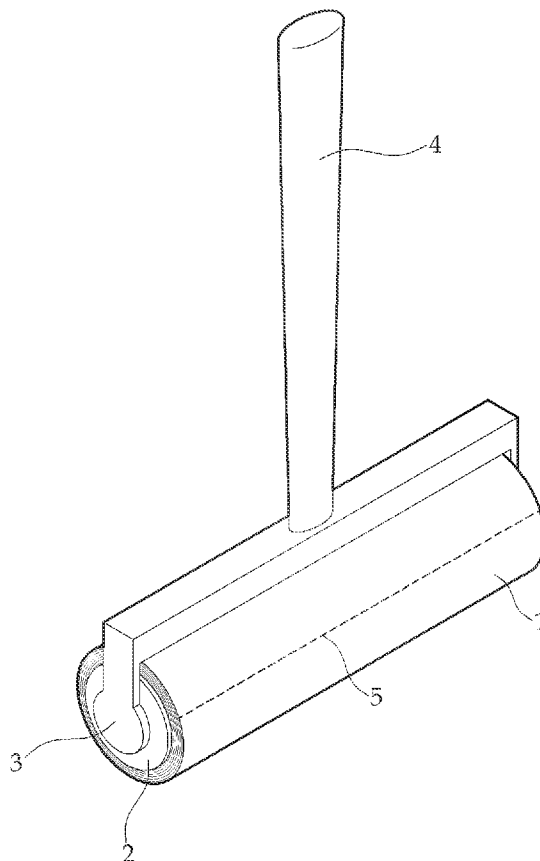
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A47L 25/08 (2006.01)(52) **U.S. Cl.**
CPC **A47L 25/08** (2013.01)(57) **ABSTRACT**

The disclosed tape cleaner is convenient to use and allows easy replacement of the tape, and prevents an adhesive tape roller from moving away from the tape cleaner during use. The tape cleaner comprises an adhesive tape roller, a support roller which is inserted and mounted into the adhesive tape roller and supports the adhesive tape roller, an upper cover which has both side ends coupled to both side ends of the support roller, respectively, and encloses a part of an outer circumferential surface of the adhesive tape roller, a rotary cover which has both side ends coupled to both side ends of the support roller, respectively, encloses a part of the outer circumferential surface of the adhesive tape roller inside the upper cover, and is rotatable about an axis in a longitudinal direction of the support roller, and a handle connected to the upper cover, in which the rotary cover includes a tape cutter part which is positioned at an edge portion thereof and cuts an adhesive tape of the adhesive tape roller, the upper cover includes a stopper part which is positioned on an inner circumferential surface of the upper cover and stops the rotary cover so that the rotary cover is not arbitrarily rotated when the adhesive tape is cut by the tape cutter part, both the adhesive tape roller and the support roller are rotatable about the axis in the longitudinal direction of the support roller, and all of the adhesive tape roller, the support roller, the upper cover, and the rotary cover are attachable and detachable.



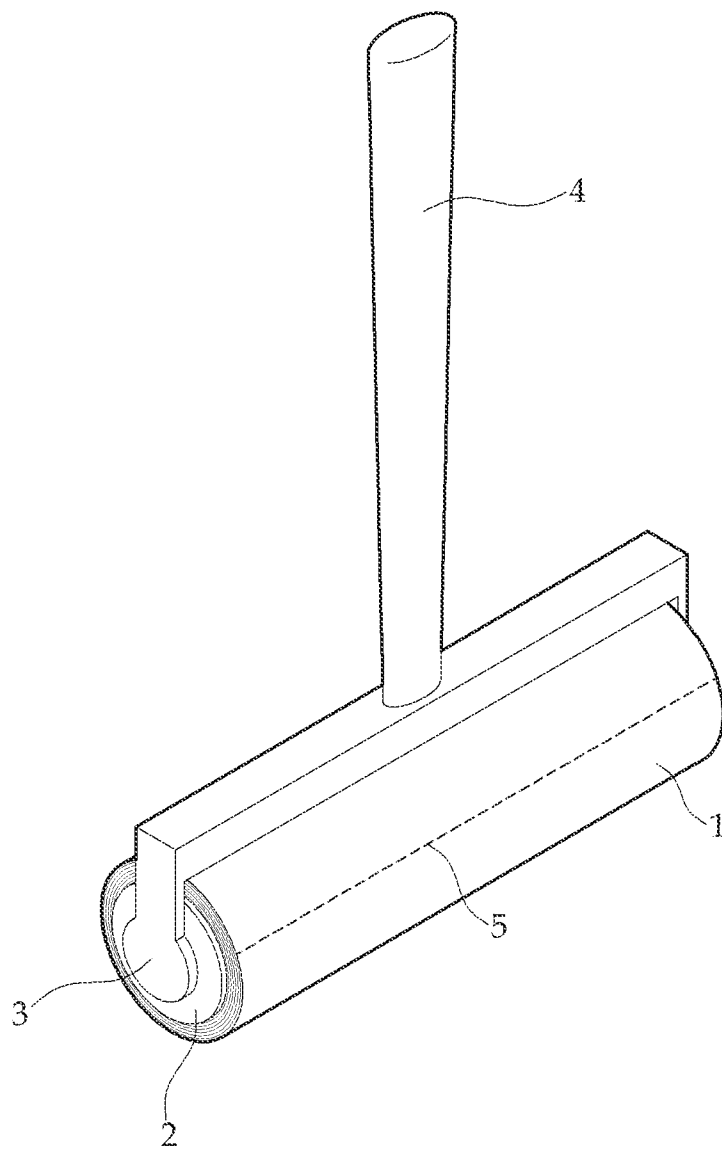


Fig. 1

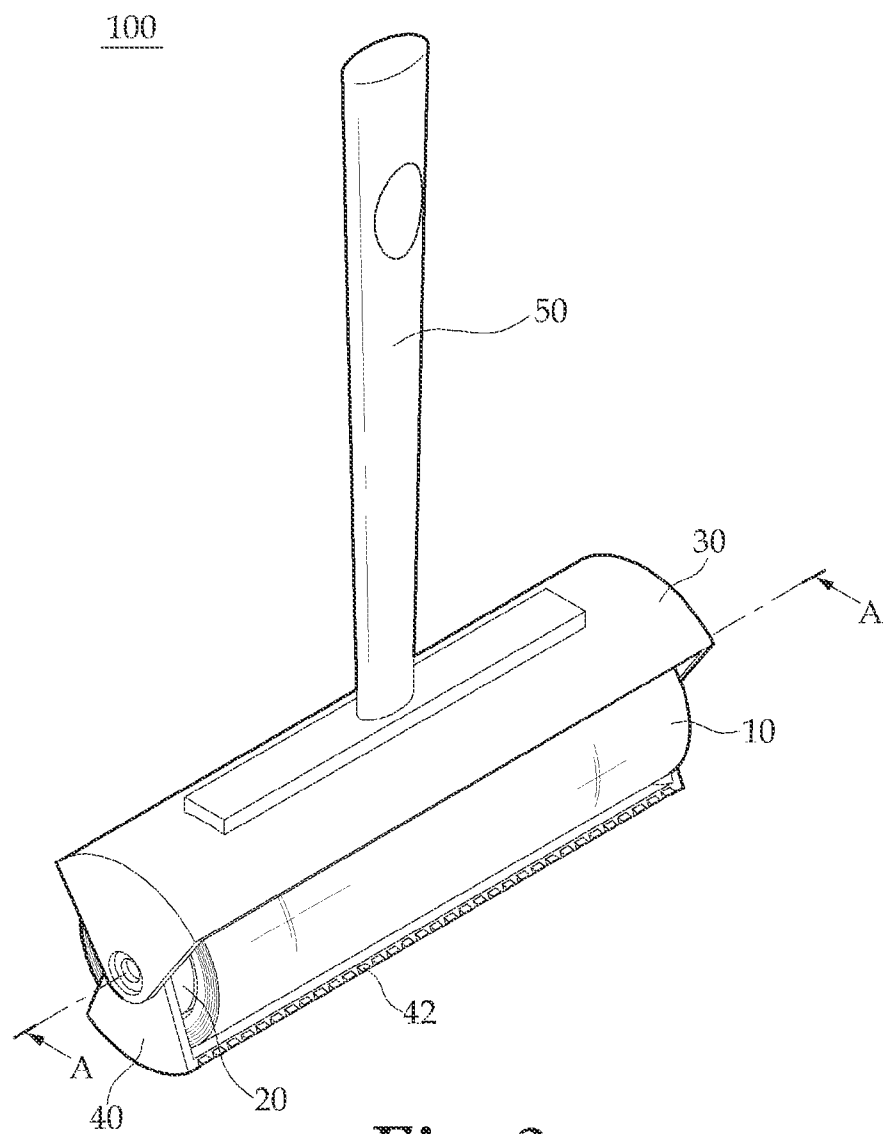


Fig. 2

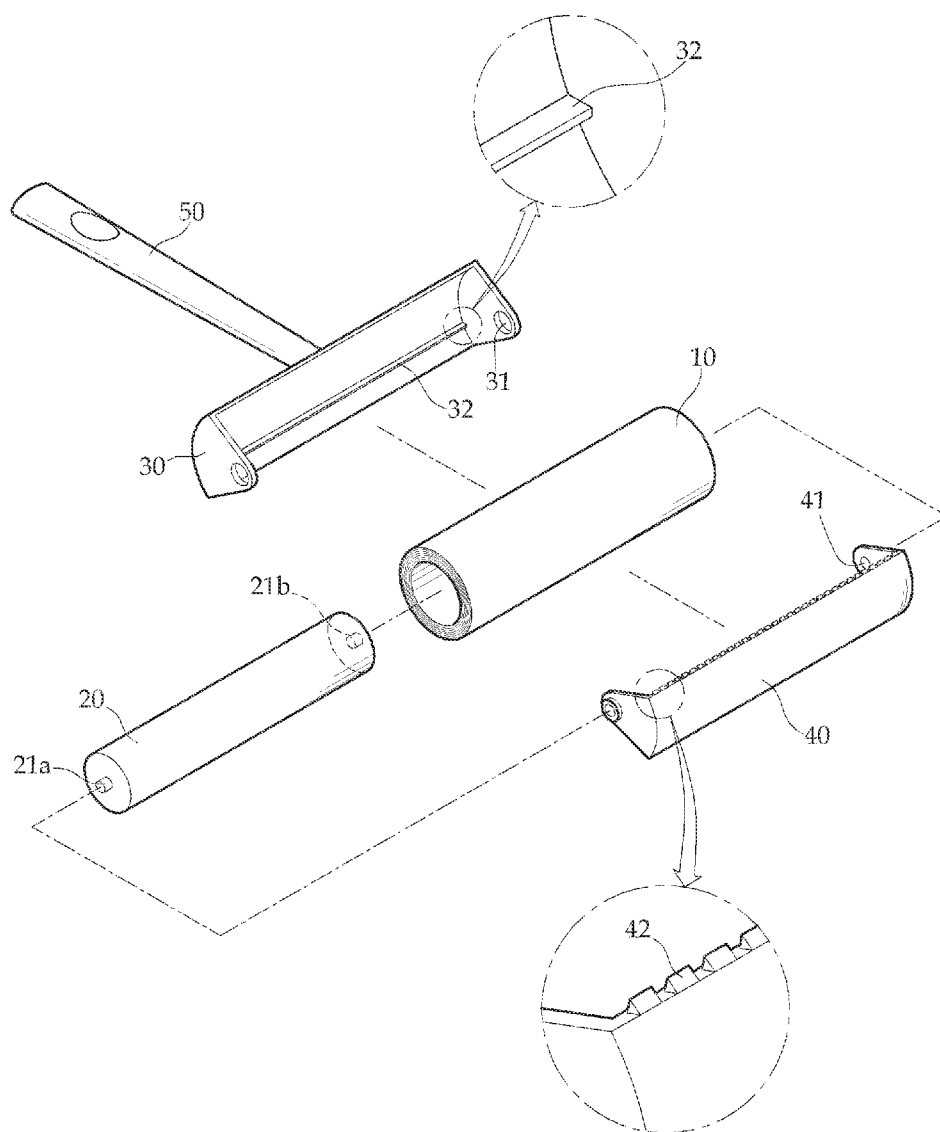


Fig. 3

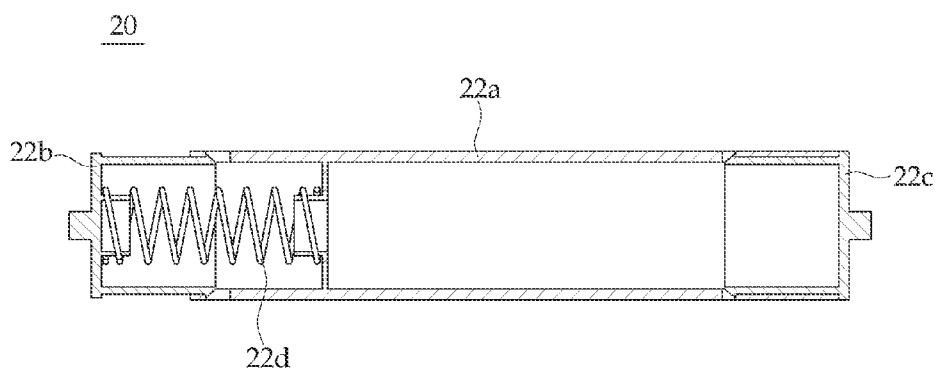


Fig. 4

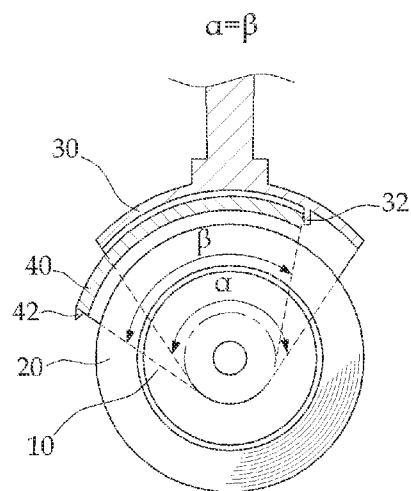


Fig. 5a

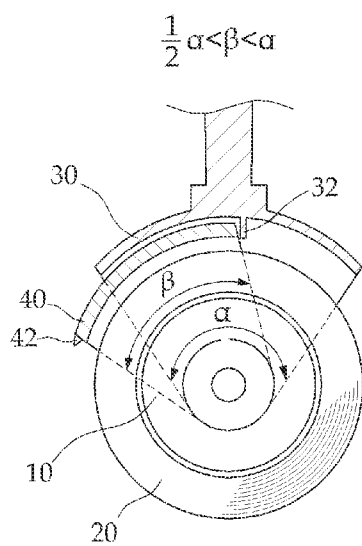


Fig. 5b

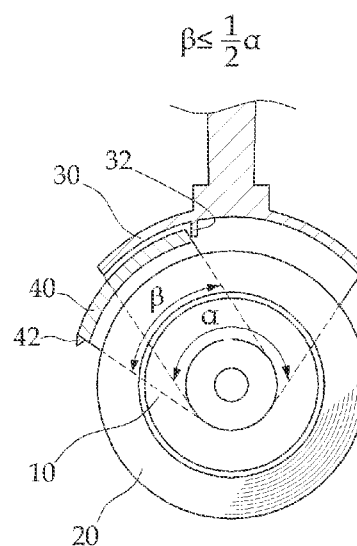


Fig. 5c

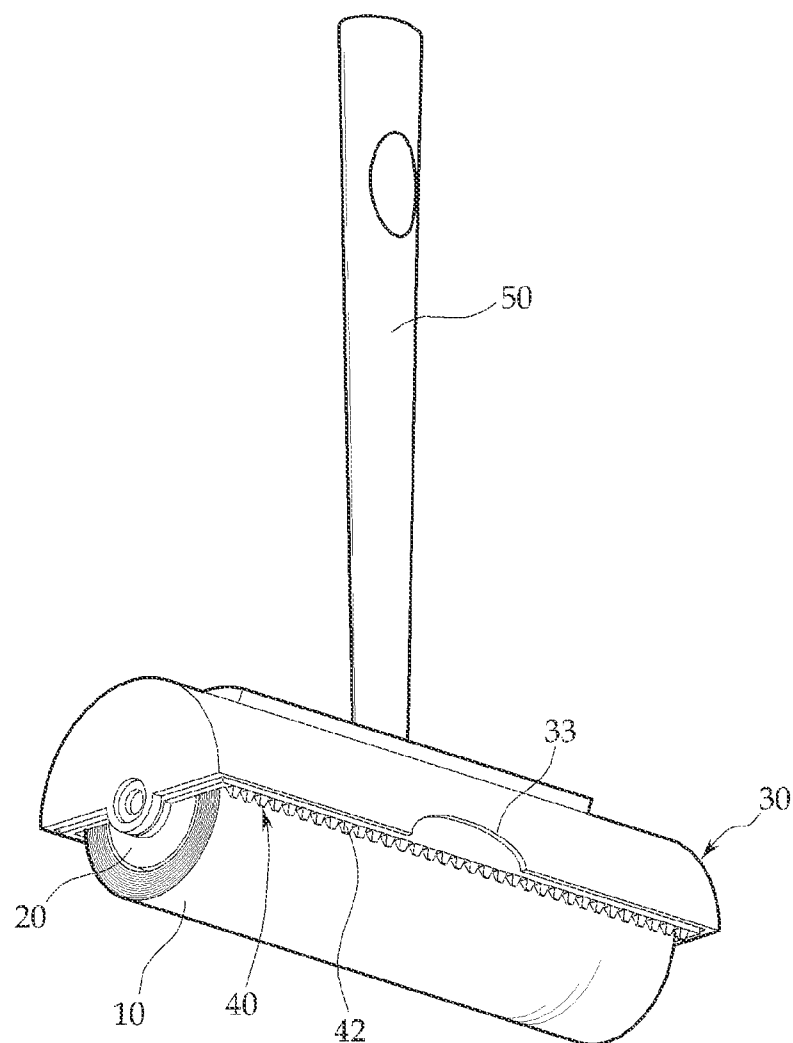


Fig. 6

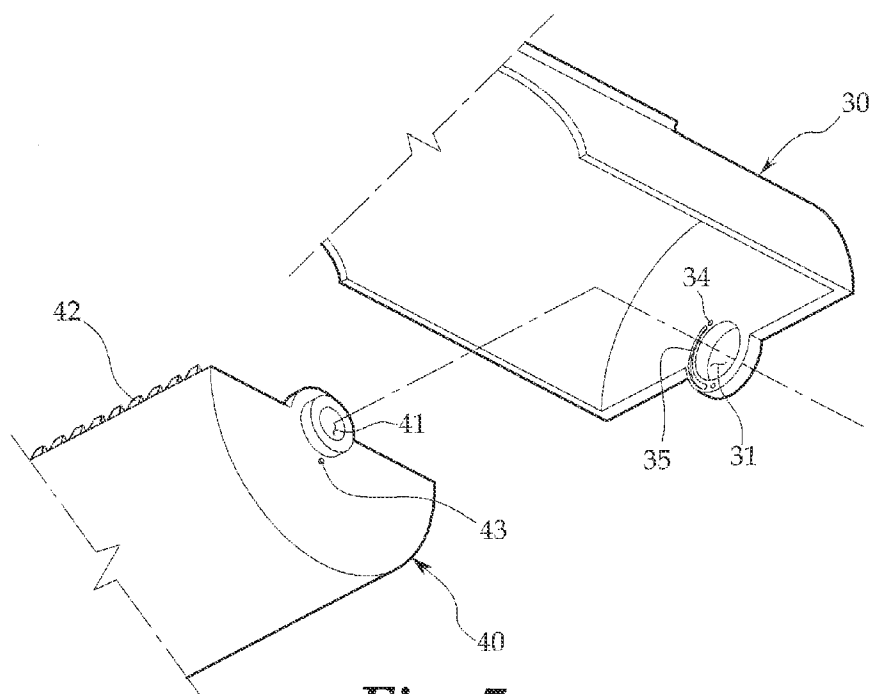


Fig. 7a

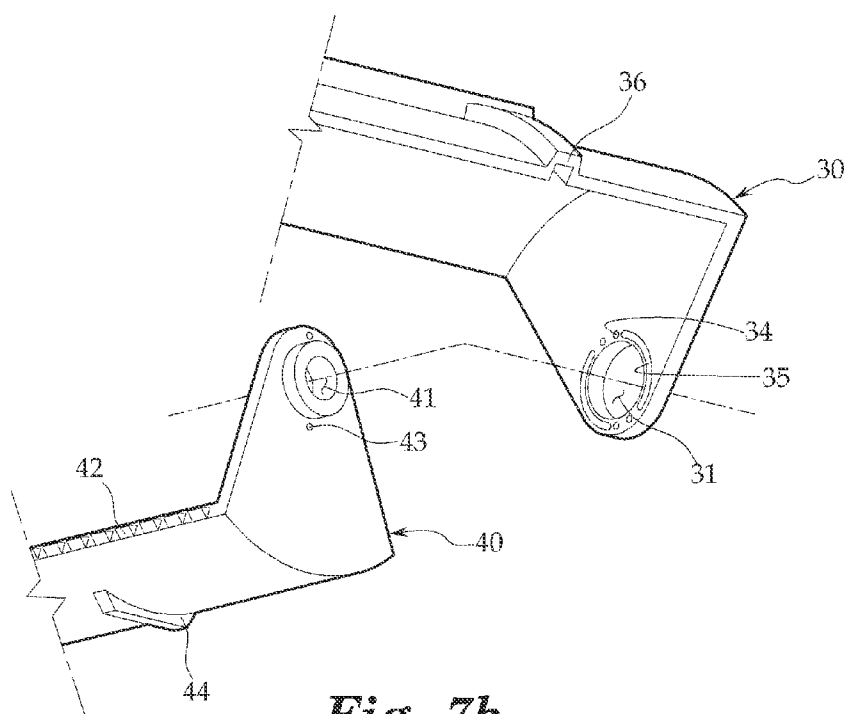


Fig. 7b

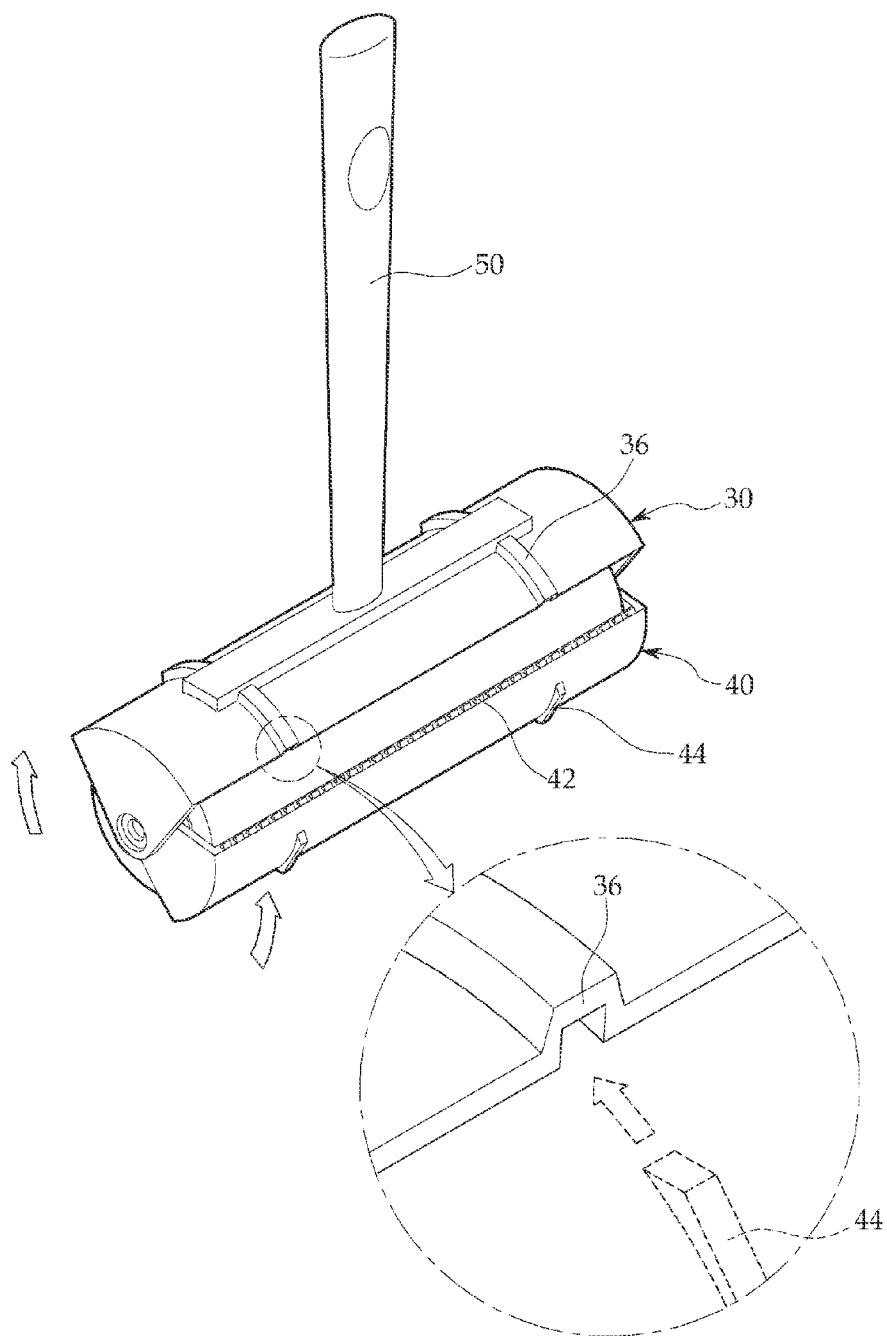


Fig. 8

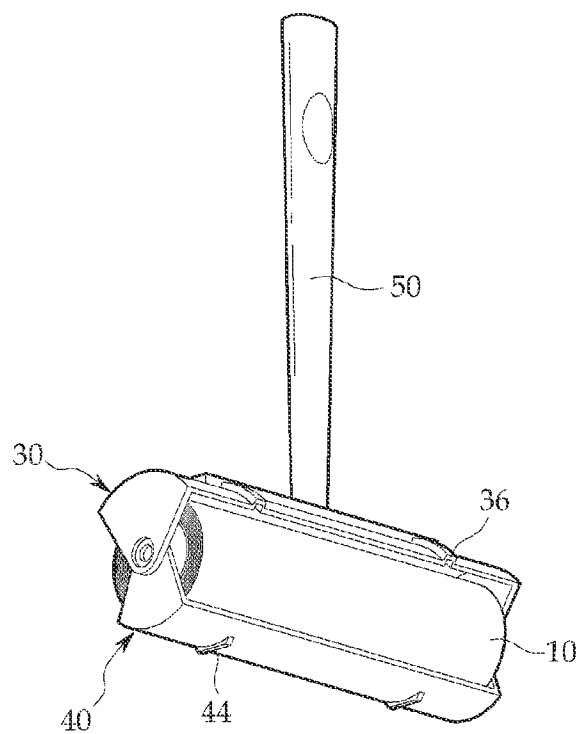


Fig. 9a

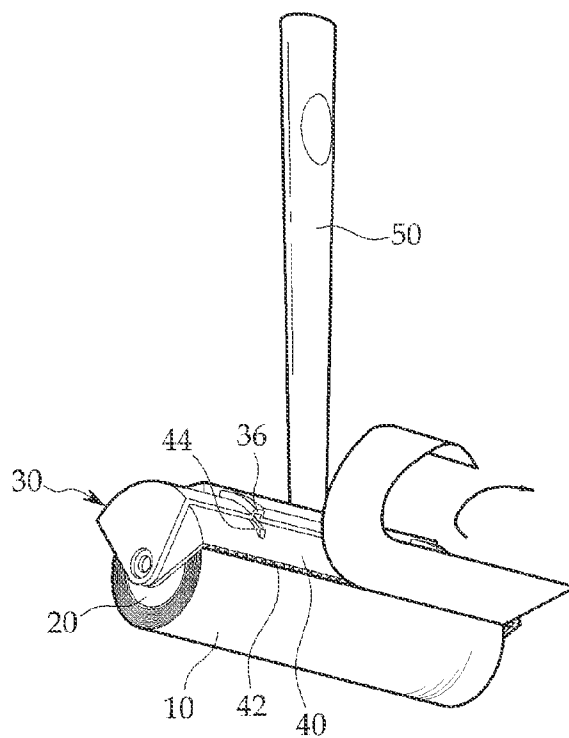


Fig. 9b

TAPE CLEANER

TECHNICAL FIELD

[0001] The disclosure relates to a tape cleaner which removes foreign substances, such as dust, hairs, and lint adhering to bed sheets, clothes, and carpets.

BACKGROUND

[0002] Tape cleaners are widely used to remove various types of foreign substances, such as dust, hairs, and lint adhering to the surfaces of fabrics, such as bed sheets, clothes, and carpets.

[0003] In general, as illustrated in FIG. 1, the tape cleaner includes an adhesive tape roller 1 on which an adhesive tape is mounted, a support roller 2 which is inserted and mounted into the adhesive tape roller and supports the adhesive tape roller, a support frame 3 which has both ends coupled to both ends of the support roller, respectively, and supports the support roller, and a handle 4 which has a front end connected to the support frame.

[0004] When the handle 4 of the tape cleaner is gripped and the adhesive tape roller is rotated and moved at a necessary location, foreign substances such as dust and hairs adhere to the surface of the adhesive sheet layer of the adhesive tape roller so as to be removed while the adhesive tape roller is rotated. When too many foreign substances adhere to the surface of the adhesive sheet layer while removing foreign substances as described above, adhesive force of the adhesive sheet layer deteriorates such that foreign substances may not be removed. In this case, a user has removed a portion of the adhesive sheet layer, to which foreign substances adhere, by using cutting means such as a knife, and scissors. Accordingly, in the related art, in order to allow the user to readily remove the portion of the adhesive sheet layer, to which foreign substances adhere, and expose a new portion of the adhesive sheet layer, without using the cutting means such as a knife, and scissors, perforated tear lines 5 are formed on the adhesive tape roller in a longitudinal direction of the adhesive tape roller at predetermined intervals. Therefore, the user could readily remove the adhesive sheet layer, to which foreign substances adhere, along the perforated tear lines, and thereafter expose a new adhesive sheet layer.

[0005] However, in the case of the tape cleaner that uses the adhesive tape roller on which the perforated tear lines are formed, an additional process is required to form the perforated tear line on the adhesive tape roller when manufacturing the tape cleaner, and therefore there was a problem in that manufacturing costs for the tape cleaner were increased.

[0006] Because the adhesive tape could not be easily cut in accordance with a state of the perforated tear lines of the adhesive tape roller, it is inconvenient to use the tape cleaner. Particularly, when foreign substances having a long length like hairs adhered to the adhesive tape in a direction in which the adhesive tape is wound, the adhesive tape could not be cut accurately along the perforated tear line.

[0007] When an area of a portion of the adhesive tape, to which foreign substances adhere, is narrow, there is a problem in that the adhesive tape roller is wasted when the adhesive tape is cut along the perforated tear line.

SUMMARY

[0008] The disclosed tape cleaner is convenient to use and allows easy replacement of the tape, and prevents an adhesive tape roller from moving away from the tape cleaner during use.

[0009] In one embodiment, the tape cleaner comprises an adhesive tape roller, a support roller which is inserted and mounted into the adhesive tape roller and supports the adhesive tape roller, an upper cover which has both side ends coupled to both side ends of the support roller, respectively, and encloses a part of an outer circumferential surface of the adhesive tape roller, a rotary cover which has both side ends coupled to both side ends of the support roller, respectively, encloses a part of the outer circumferential surface of the adhesive tape roller inside the upper cover, and is rotatable about an axis in a longitudinal direction of the support roller, and a handle connected to the upper cover, in which the rotary cover includes a tape cutter part which is positioned at an edge portion thereof and cuts an adhesive tape of the adhesive tape roller, the upper cover includes a stopper part which is positioned on an inner circumferential surface of the upper cover and stops the rotary cover so that the rotary cover is not arbitrarily rotated when the adhesive tape is cut by the tape cutter part, both the adhesive tape roller and the support roller are rotatable about the axis in the longitudinal direction of the support roller, and all of the adhesive tape roller, the support roller, the upper cover, and the rotary cover are attachable and detachable.

[0010] In one embodiment, the tape cleaner comprises a tape cutter part, thereby easily removing a portion of the adhesive sheet layer of the adhesive tape roller, to which foreign substances adhere, and exposing a new adhesive sheet layer.

[0011] In one embodiment, the roller and the cover are integrally formed to avoid the loss of the cover. Accordingly, storage is convenient and the exposed adhesive tape surface is not damaged.

[0012] In one embodiment, the cover may be conveniently opened and closed, the tape may be easily replaced, and it is not complicated to design the tape. The tape cleaner may be conveniently used, and the adhesive tape roller is not easily moved away when the tape cleaner is used.

BRIEF DESCRIPTION OF THE DRAWINGS

[0013] FIG. 1 is a perspective view of a tape cleaner of the related art.

[0014] FIG. 2 is a perspective view of one embodiment of a tape cleaner according.

[0015] FIG. 3 is an exploded perspective view of one embodiment of the tape cleaner.

[0016] FIG. 4 is a cross-sectional view illustrating an exemplary embodiment of a support roller used in the tape cleaner.

[0017] FIGS. 5a, 5b, and 5c are a cross-sectional view illustrating a position of a stopper part according to sizes of an upper cover and a rotary cover, in the tape cleaner.

[0018] FIG. 6 is a bottom side perspective view of one embodiment of a tape cleaner.

[0019] FIGS. 7A and 7B each illustrate an aspect and the number of grooves and guides of the upper cover which are coupled in accordance with the number of side protrusions of the rotary cover.

[0020] FIG. 8 is a perspective view of one embodiment of the tape cleaner in a state in which the rotary cover is rotated.

[0021] FIG. 9 is bottom side perspective views of one embodiment of the tape cleaner, in which FIG. 9A illustrates a state in which the tape cleaner is not in use, and FIG. 9B illustrates a state in which the tape cleaner is in use.

DETAILED DESCRIPTION

[0022] FIG. 2 is a perspective view of a tape cleaner according to an exemplary embodiment of the present invention. The tape cleaner 100 includes an adhesive tape roller 10, a support roller 20, an upper cover 30 having a stopper part 32 positioned on an inner circumferential surface thereof, a rotary cover 40 having a tape cutter part 42 positioned at an edge portion thereof, and a handle 50. All of the adhesive tape roller, the support roller, the upper cover, and the rotary cover are attachable and detachable.

[0023] The adhesive tape roller 10 is a common roll-shaped adhesive tape with an adhesive tape wound on the surface of the roll, and has a plurality of adhesive sheet layers positioned on an outer circumferential surface thereof. The adhesive tape roller 10 may be rotated about an axis in a longitudinal direction of the support roller. Therefore, when the adhesive tape roller 10 is rotated and moved at the time of using the tape cleaner, foreign substances such as dust, and hairs may adhere to the surface of the adhesive sheet layer so as to be removed. However, unlike the tape cleaner of the related art, in the tape cleaner 100 of the present invention, when adhesive force of the adhesive tape of the adhesive tape roller, to which foreign substances adhere, is separated at a predetermined length, and cut by the tape cutter part 42 such that a new adhesive sheet layer may be exposed to remove foreign substances.

[0024] The adhesive tape roller 10 has a through hole at central portions of both sides thereof so that the support roller 20 may be inserted and mounted into the through hole. Therefore, the adhesive tape roller 10 is supported by the support roller 20 that is inserted into the through hole.

[0025] In the adhesive tape roller 10, perforated tear lines (not illustrated) may be optionally disposed for each circumference of the roll of the adhesive tape. It is more convenient in that the adhesive sheet layer may be more readily cut by cutting a portion of the perforated tear line by means of the tape cutter part at the time of cutting the adhesive sheet layer.

[0026] The support roller 20 is inserted and mounted into the through hole of the adhesive tape roller 10, and serves to support the adhesive tape roller 10. Referring to FIG. 3, the support roller 20 is coupled to both side ends of the upper cover 30 and both side ends of the rotary cover 40.

[0027] According to the exemplary embodiment, the support roller 20 may include a first coupling protruding portion 21a and a second coupling protruding portion 21b, which protrude outward from both side ends thereof, respectively (see FIG. 3). In this case, by the first and second coupling protruding portions 21a and 21b, the support roller 20 may be easily coupled to both side ends of the upper cover and both side ends of the rotary cover, respectively.

[0028] According to another exemplary embodiment, as illustrated in FIG. 4, the support roller 20 may include a support roller core 22a, a first support roller side cap 22b, a second support roller side cap 22c, and an elastic member 22d. FIG. 4 illustrates the support roller 20 wherein the support roller core 22a, the first support roller side cap 22b, the second support roller side cap 22c, and the elastic member 22d are coupled to each other. As such a support roller 20 is included, the tape cleaner 100 of the present invention may allow the adhesive tape roller 10 to be readily disassembled and replaced.

[0029] As shown in FIG. 4, the elastic member 22d may be disposed at the end facing the first support roller side cap 22b

in the support roller core 22a. Examples of the elastic member 22d include a spring or the like. A partition wall may be disposed inside the support roller core 22a. In this case, the elastic member 22d may be positioned between the first support roller side cap 22b and the partition wall.

[0030] A button may be disposed at the first support roller side cap 22b. When the button is pushed, the elastic member 22d may be compressed, thereby more readily disassembling and replacing the adhesive tape roller.

[0031] Specifically, in the case of replacing the adhesive tape roller 10, when the button of the first support roller side cap 22b is pushed, force is applied to the elastic member 22d such that a length of the elastic member 22d is shortened, and thereby gaps are formed between one side ends of the upper cover 30, one side ends of the rotary cover 40, and the first support roller side cap 22b. Through the gaps, the adhesive tape roller 10 may be easily disassembled from the support roller 20 so as to be replaced. As such, according to the tape cleaner of an exemplary embodiment of the present invention, the adhesive tape roller 10 may be conveniently replaced through the push of the button.

[0032] As illustrated in FIG. 3, both side ends of the upper cover 30 are coupled to both side ends of the support roller 20, respectively. According to the exemplary embodiment, the upper cover 30 may have through holes 31 at both ends thereof. The upper cover 30 and the support roller 20 may be coupled to each other by inserting an end of the first coupling protruding portion 21a and an end of the second coupling protruding portion 21b, which are disposed at both sides of the support roller 20, into the through holes 31, respectively.

[0033] The upper cover 30 encloses a part of the outer circumferential surface of the adhesive tape roller 10. The upper cover 30 may prevent an upper portion of the adhesive tape roller 10 from being damaged by contaminants when the tape cleaner is not in use. In this case, a predetermined gap may be provided between the upper cover 30 and the outer circumferential surface of the adhesive tape roller 10.

[0034] As illustrated in FIG. 3, the upper cover 30 has the stopper part 32 formed on the inner circumferential surface thereof. The stopper part 32 stops the rotary cover 40 when the adhesive tape is cut by the tape cutter part 42 so that the rotary cover 40 is not arbitrarily rotated. Because when the adhesive sheet layer is cut by the tape cutter part 42, the rotational motion of the rotary cover 40 may be stopped by the stopper part 32 even though external force is applied to the rotary cover 40, the user may easily cut the adhesive sheet layer with the tape cutter part 42. In addition, when both a central angle of the side of the upper cover and a central angle of the side of the rotary cover are 180°, the stopper part 32 may stop the rotary cover 40 so that the rotary cover 40 is not rotated when the tape cleaner is not in use.

[0035] A position of the stopper part 32 is not particularly limited, but may be adjusted in consideration of sizes of the upper cover and the rotary cover. According to the exemplary embodiment, as illustrated in FIG. 5A, when the central angle β of the side of the rotary cover is the same as the central angle α of the side of the upper cover, it is appropriate that the stopper part 32 is positioned on the inner circumferential surface of the upper cover between the central portion and a second edge portion of the upper cover, and preferably, the stopper part 32 may be positioned in the vicinity of the second edge portion of the upper cover. According to another exemplary embodiment, when the central angle β of the side of the rotary cover is smaller than the central angle α of the side of

the upper cover, and larger than $\frac{1}{2}$ of the central angle of the upper cover, the stopper part **32** may be positioned on the inner circumferential surface of the upper cover **30** in the vicinity of the central portion of the upper cover (see FIG. 5B). According to yet another exemplary embodiment, when the central angle β of the side of the rotary cover is smaller than $\frac{1}{2}$ of the central angle α of the side of the upper cover, the stopper part **32** may be positioned on the inner circumferential surface of the upper cover between the central portion and a first edge portion of the upper cover, and preferably, the stopper part **32** may be positioned in the vicinity of the first edge portion of the upper cover (see FIG. 5C). When the adhesive tape is cut by the tape cutter part **42**, the stopper part **32** stops arbitrary rotational motion of the rotary cover **40** while coming into contact with the second edge portion of the rotary cover **40**, which is positioned at an opposite side relative to the tape cutter part **42**. Here, when the shapes of the sides of the upper cover and the rotary cover, for example, are fan shapes or semi-circular shapes, the central angle means an angle formed by two sides of the fan shape or the semi-circular shape. The first edge portion of the upper cover means an edge portion of the upper cover, which corresponds to a position of the tape cutter part **42**, when the rotary cover is fully enclosed by the upper cover, that is, when the tape cleaner according to the exemplary embodiment of the present invention is in use. The second edge portion of the upper cover means an edge portion that is positioned at an opposite side relative to the first edge portion of the upper cover.

[0036] The upper cover **30** may have a withdrawing groove **33** at one edge portion or both edge portions thereof. For example, the withdrawing groove **33** may be positioned at the first edge portion of the upper cover **30**, or the withdrawing groove **33** may be positioned at the first and second edge portions of the upper cover **30**, respectively. As illustrated in FIG. 6, when the rotary cover **40** is fully enclosed by the upper cover **30**, the user may easily withdraw the rotary cover **40**, which is fully enclosed by the upper cover **30**, through the withdrawing groove **33**.

[0037] As illustrated in FIG. 7, the upper cover **30** may have grooves **34** and guides **35** formed in inner surfaces of both sides thereof. For example, as illustrated in FIG. 7A, two grooves **34** and one guide **35** may be provided in each of the inner surfaces of both sides of the upper cover **30**. Alternatively, as illustrated in FIG. 7B, four grooves **34** and two guides **35** may be provided in each of the inner surfaces of both sides of the upper cover **30**, or four grooves **34** and four guides **35** may be provided. In this case, two grooves **34** may be positioned at an upper portion and a lower portion of each of the inner surfaces of both sides of the upper cover **30**, and the remaining two grooves **34** may be positioned at a left upper portion and a right lower portion of each of the inner surfaces of both sides of the upper cover **30**. Here, the guides **35** may be positioned between the upper groove and the right lower groove, and between the lower groove and the left upper groove, respectively, or may be positioned between the grooves, respectively. However, positions of the left upper groove and the right lower groove may be adjusted in consideration of sizes of the sides of the upper cover and the rotary cover. Functions of the groove **34** and the guide **35** will be described in the following description regarding the rotary cover.

[0038] The shape of the side of the upper cover **30** is not particularly limited, and for example, may be a fan shape, a semi-circular shape, or the like.

[0039] The size of the side of the upper cover **30** is not particularly limited. However, when the central angle α of the side of the upper cover is 30° to 180° , and may preferably be 45° to 90° , it is easy to use and store the tape cleaner. Particularly, when the central angle α of the side of the upper cover **30** is 180° , and the central angle β of the side of the rotary cover **40** is 180° , that is, when both the upper cover and the rotary cover have a semi-circular shape, a lower portion as well as an upper portion of the adhesive tape roller **10** may be protected from contaminants when the tape cleaner is not in use.

[0040] A material of the upper cover **30** is not particularly limited, and for example, may be metal, plastic, or the like.

[0041] As illustrated in FIG. 3, both side ends of the rotary cover **40** are coupled to both side ends of the support roller **20**, respectively. According to the exemplary embodiment, the rotary cover **40** may have through holes **41** at both ends thereof. The rotary cover **40** and the support roller **20** may be coupled to each other by inserting both side ends of the support roller **20**, for example, the end of the first coupling protruding portion **21a** and the end of the second coupling protruding portion **21b** of the support roller **20** into the through holes **41**, respectively.

[0042] Inside the upper cover **30**, the rotary cover **40** encloses a part of the outer circumferential surface of the adhesive tape roller **10**. The rotary cover **40** may prevent a lower portion of the adhesive tape roller **10** from being damaged by contaminants when the tape cleaner is not in use. Here, a predetermined gap may be provided between the rotary cover **40** and the outer circumferential surface of the adhesive tape roller **10**.

[0043] As illustrated in FIG. 3, the rotary cover **40** includes the tape cutter part **42** formed at the edge portion thereof. In the case of the present invention, since the user may cut the adhesive tape (adhesive sheet layer), which is contaminated by foreign substances, using the tape cutter part **42** without using cutting means such as a knife, and scissors, and may expose a new adhesive tape (adhesive sheet layer), the user may use the tape cleaner conveniently.

[0044] The tape cutter part **42** may be integrally formed with the rotary cover so as to be a single body with the rotary cover, or a separate tape-cutter-part member may be mounted at the edge portion of the rotary cover so as to be disassembled and replaced from the rotary cover. If the tape cutter part is integrally formed with the rotary cover, a material of the tape cutter part is the same as a material of the rotary cover. Meanwhile, if the tape cutter part is formed to be disassembled and replaced from the rotary cover, a material of the tape cutter part may be metal, plastic, or the like that is identical to or different from a material of the rotary cover.

[0045] A shape of the tape cutter part is not particularly limited as long as the tape cutter part may cut the adhesive sheet layer, and for example, may be a triangular shape, or the like.

[0046] The rotary cover **40** may be rotated in both directions about an axis in a longitudinal direction of the support roller **20**. However, the rotary cover **40** of the present invention may be fixed when the rotary cover **40** is fully enclosed by the upper cover **30**, and when the rotary cover **40** is rotated

about the axis in the longitudinal direction of the support roller 20 and positioned to be symmetrical to the upper cover 30.

[0047] The rotary cover 40 may have side protrusions 43 formed on each of outer surfaces of both sides thereof (see FIGS. 7A and 7B). One side protrusion 43 may be provided on a lower portion of each of the outer surfaces of both sides of the rotary cover 40 (see FIG. 7A), or one side protrusion 43 may be provided on each of an upper portion and a lower portion of each of the outer surfaces of both sides of the rotary cover 40 (see FIG. 7B). The side protrusion 43 may be moved along the guide 35 of the upper cover 30 and then fitted into the groove 34.

[0048] According to the exemplary embodiment, as illustrated in FIG. 7A, one side protrusion 43 may be provided on each of the outer surfaces of both sides of the rotary cover 40, and two grooves 34 and one guide 35 may be provided on each of the inner surfaces of both sides of the upper cover 30. According to another exemplary embodiment, as illustrated in FIG. 7B, two side protrusions 43 may be provided on each of the outer surfaces of both sides of the rotary cover 40, and four grooves 34 and two guides 35 may be provided on each of the inner surfaces of both sides of the upper cover 30. When the rotary cover 40 and the upper cover 30 are coupled to each other, the side protrusions 43 of both sides of the rotary cover 40 may be moved along the guides 35 of both sides of the upper cover 30, respectively, and then fitted into the grooves 34 of both sides of the upper cover 30, respectively. Referring to FIGS. 7A and 7B that is an enlarged view of a combined portion of the rotary cover 40 and the upper cover 30, an aspect can be seen in which the side protrusions 43 of the rotary cover 40 are fitted into the grooves 34 of the upper cover 30.

[0049] According to the exemplary embodiment, when the tape cleaner according to the present invention is in use, both side protrusions 43 of the rotary cover 40 are moved along the guides 35 of the upper cover 30, and then fitted and fixed into the grooves 34 (see FIG. 7B). At this time, the rotary cover 40 is positioned above the adhesive tape roller 10 such that the lower portion of the adhesive tape roller 10 is opened, thereby removing foreign substances while the tape cleaner is rotated and moved. When the tape cleaner is not in use, if both side protrusions 43 of the rotary cover 40 are moved along the guides 35 of the upper cover 30, both side protrusions 43 are fitted and fixed again into the grooves 34. And then, the lower portion of the adhesive tape roller becomes a closed state such that the lower portion of the adhesive tape roller 10 is protected from contaminants, thereby easily protecting the tape cleaner.

[0050] The surface of the lower portion of the rotary cover 40 may be flat (not illustrated). In this case, the tape cleaner may be stored in an upright state with respect to the bottom.

[0051] The rotary cover 40 may have support members 44 formed at the lower portion thereof (see FIG. 8). The support members 44 serve to support the tape cleaner itself, when the tape cleaner is not in use, that is, in a storage mode. When the rotary cover 40 has the support members 44, the upper cover 30 may have grooves 36 that may accommodate the support members of the rotary cover 40. As illustrated in FIG. 8, when the tape cleaner 100 according to the exemplary embodiment of the present invention is converted from the storage mode into a usage mode by rotating the rotary cover 40, the support members 44 of the rotary cover 40 may be accommodated in the grooves 36 of the upper cover 30.

[0052] The shape of the side of the rotary cover 40 is not particularly limited, and for example, may be a fan shape, a semi-circular shape, or the like. Here, the shape of the side of the rotary cover may correspond to the shape of the side of the upper cover.

[0053] The size of the side of the rotary cover 40 is not particularly limited. However, when the central angle β of the side of the rotary cover is 30° to 180° , and may preferably be 45° to 90° , the lower portion of the adhesive tape roller 10 may be protected from contaminants when the tape cleaner is not in use.

[0054] The material of the rotary cover 40 is not particularly limited, and for example, may be metal, plastic, or the like.

[0055] In the present invention, the handle 50 is connected to the upper cover 30. A handle cap (not illustrated) may be mounted at the upper portion of the handle 50. The handle 50 may be made of rubber in order to prevent sliding.

[0056] Hereinafter, the storage state and the usage state of the tape cleaner according to the exemplary embodiment of the present invention will be described in detail.

[0057] FIG. 9A illustrates an aspect in which the tape cleaner 100 according to the exemplary embodiment of the present invention is not in use. The rotary cover 40 is positioned below the adhesive tape roller 10 so as to serve as a support. Accordingly, it is possible to prevent the lower portion of the adhesive tape roller 10 from being damaged by contaminants. In this state, the side protrusions 43 of both sides of the rotary cover 40 are fitted and fixed into the grooves 34 of the upper cover 30, that is, grooves 34 of the upper and lower portions of the upper cover (see FIG. 7).

[0058] FIG. 9B illustrates an aspect in which the tape cleaner 100 according to the exemplary embodiment of the present invention is in use when the rotary cover 40 depicted in FIG. 9A is rotated in an opposite direction. The side protrusions 43 of both sides of the rotary cover 40 are moved along the guides 35 of both sides of the upper cover 30, and then fitted and fixed again into the grooves 34 (see FIG. 7). Hereby, in the tape cleaner 100 of the present invention, the rotary cover 40 is positioned above the adhesive tape roller 10 such that the lower portion of the adhesive tape roller 10 is opened, thereby removing foreign substances on the bottom. Because in the tape cleaner 100, when a portion of the adhesive tape, to which foreign substances adhere, is cut by the tape cutter part, the side protrusions 43 of both sides of the rotary cover 40 are fitted and fixed into the grooves while rotational motion of the rotary cover 40 is stopped by the stopper part 32, such that the user may cut stably the adhesive tape using small force.

[0059] When the rotary cover 40 is rotated again in a state in which the lower portion of the adhesive tape roller 10 is open (that is, the use mode of the tape cleaner—see FIG. 9B), the side protrusions 43 of both sides of the rotary cover 40 are moved again along the guides 35 of both sides of the upper cover 30. When the side protrusions 43 are moved and then fitted and fixed again into the grooves 34 of the upper cover 30, the rotary cover 40 may be fixed again in a state in which the lower portion of the adhesive tape roller is closed (that is, the storage mode of the tape cleaner—see FIG. 9A).

[0060] As such, since the tape cleaner according to the present invention may be easily converted from a state in which the tape cleaner is in use into a state in which the tape cleaner is not in use or vice versa, it is easy to use the tape cleaner.

[0061] From the foregoing, it will be appreciated that various embodiments of the present invention have been described herein for purposes of illustration, and that various modifications may be made without departing from the scope and spirit of the present invention. Accordingly, the various embodiments disclosed herein are not intended to be limiting, with the true scope and spirit being indicated by the following claims.

What is claimed is:

1. A tape cleaner comprising:
an adhesive tape roller;
a support roller which is inserted and mounted into the adhesive tape roller and supports the adhesive tape roller;
an upper cover which has both side ends coupled to both side ends of the support roller, respectively, and encloses a part of an outer circumferential surface of the adhesive tape roller;
a rotary cover which has both side ends coupled to both side ends of the support roller, respectively, encloses a part of the outer circumferential surface of the adhesive tape roller inside the upper cover, and is rotatable about an axis in a longitudinal direction of the support roller; and
a handle connected to the upper cover,
wherein the rotary cover includes a tape cutter part which is positioned at an edge portion thereof and cuts an adhesive tape of the adhesive tape roller,
the upper cover includes a stopper part which is positioned on an inner circumferential surface of the upper cover and stops the rotary cover so that the rotary cover is not arbitrarily rotated when the adhesive tape is cut by the tape cutter part,
both the adhesive tape roller and the support roller are rotatable about the axis in the longitudinal direction of the support roller, and
all of the adhesive tape roller, the support roller, the upper cover, and the rotary cover are attachable and detachable.
2. The tape cleaner of claim 1, wherein the upper cover has a withdrawing groove which is positioned at one edge portion or both edge portions thereof and withdraws the rotary cover enclosed by the upper cover.
3. The tape cleaner of claim 1, wherein the tape cutter part is integrally formed with the rotary cover, or formed to be disassembled from the rotary cover.

4. The tape cleaner of claim 1, wherein the rotary cover is fixed when the rotary cover is fully enclosed by the upper cover, and when the rotary cover is rotated about the axis in the longitudinal direction of the support roller and positioned to be symmetrical to the upper cover.

5. The tape cleaner of claim 4, wherein the upper cover has guides and grooves on inner surfaces of both sides thereof, the rotary cover has side protrusions on outer surfaces of both sides thereof, and the side protrusions are moved along the guides and then fitted into the grooves so that the rotary cover is fixed.

6. The tape cleaner of claim 5, wherein the upper cover has one guide and two grooves formed on each inner surface of both sides thereof, the rotary cover has one or two side protrusions formed on each outer surface of both sides thereof, and the side protrusion is moved along the guide and then fitted into the groove such that the rotary cover is fixed.

7. The tape cleaner of claim 5, wherein the upper cover has two or four guides and four grooves formed on each inner surface of both sides thereof, the rotary cover has one side protrusions formed on each of an upper portion and a lower portion of the outer surfaces of both sides thereof, and the side protrusions are moved along the guides and then fitted into the grooves such that the rotary cover is fixed.

8. The tape cleaner of claim 1, wherein the rotary cover has support members formed at a lower portion thereof.

9. The tape cleaner of claim 8, wherein the upper cover has grooves which accommodate the support members of the rotary cover.

10. The tape cleaner of claim 1, wherein the adhesive tape roller has perforated tear lines provided for each circumference of a roll of the adhesive tape.

11. The tape cleaner of claim 1, wherein the support roller includes a support roller core, a first support roller side cap, a second support roller side cap, and an elastic member.

12. The tape cleaner of claim 11, wherein a partition wall is formed in the support roller core, and the elastic member is disposed between the first support roller side cap and the partition wall.

13. The tape cleaner of claim 12, wherein a button is disposed at the first support roller side cap and the elastic member can be compressed by pushing the button.

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