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### Filter holder

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#### Abstract

A filter holder has an assembling base, a trigger component, and a body. The assembling base includes a mounting portion and a body holder having a connecting hole, a slit, a blocking end, and an engaging groove. The trigger component is connected to the body holder. The body is rotatably connected to the assembling base and has a cap, a connecting tube inserted into the connecting hole of the body holder, and a locking rib able to be located in the slit and the engaging groove. The trigger component is pressed away from the slit to drive the body holder to release an engagement between the engaging groove of the body holder and the locking rib of the body.

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## Background/Summary

### BACKGROUND OF THE INVENTION

#### 1. Field of the Invention

(1) The present invention relates to a filter device, and more particularly to a filter holder configured to be detachably connected to a replaceable filter cartridge.

#### 2. Description of Related Art

(2) With reference to FIG. 9, a conventional filter unit **90** substantially comprises a filter holder **91** and a filter cartridge **93**. The filter holder **91** is fixed on a bracket **95** and has a connecting tube **915** to connect with piping. The filter cartridge **93** is detachably connected to the filter holder **91**. Fluid in the piping flows into the filter unit **90** via an inlet of the connecting tube **915**, flows through the filter cartridge **93** to be filtered by the filter cartridge **93**, and then flows out from an outlet of the connecting tube **915**.

(3) The filter cartridge **93** is connected to and located below the filter holder **91**. To replace the filter cartridge **93**, the filter cartridge **93** is moved downwardly relative to the filter holder **91** to detach from the filter holder **91**. However, when a room for installing the filter unit **90** is restricted and a bottom of the filter cartridge **93** is too close to a ground, there is not enough space to allow the filter cartridge **93** to be moved downwardly relative to the filter holder **91**. The filter cartridge **93** is hard to be directly detached from the filter holder **91** fixed on the bracket **95**. To replace the filter cartridge **93**, the filter holder **91** needs to be removed from the bracket **95** firstly. Replacing the filter cartridge **93** of the conventional filter unit **90** is inconvenient accordingly.

(4) To overcome the shortcomings, the present invention tends to provide a filter holder to mitigate or obviate the aforementioned problems.

### SUMMARY OF THE INVENTION

(5) The main objective of the invention is to provide a filter holder configured to be fixed on a bracket and connected to a filter cartridge. The filter holder and the filter cartridge can be rotated

relative to the bracket to provide plenty of room for replacing the filter cartridge.

(6) A filter holder comprises an assembling base, a trigger component, and a body. The assembling base includes a mounting portion configured to be fixed to a bracket and a body holder having a connecting hole, a slit, a blocking end, and an engaging groove. The connecting hole is transversally formed through the body holder. The slit is transversally formed through the body holder, is formed through an external surface and an internal surface of the body holder, and communicates with the connecting hole and an outside of the body holder. The blocking end is located at a side of the slit. The engaging groove is recessed in the body holder, communicates with the connecting hole, and is spaced apart from the slit at an angular interval. The trigger component is connected to the body holder of the assembling base and is adjacent to the blocking end. The body is rotatably connected to the assembling base and includes a cap configured to be connected to a filter cartridge, a connecting tube formed at a top of the cap and inserted into the connecting hole of the body holder, and a locking rib protruding from an external peripheral surface of the connecting tube. Wherein, the body has an initial position and a locking position. When the body is in the initial position, the locking rib of the body is located in the slit of the body holder of the assembling base. When the body is in the locking position, the locking rib is located in and engaged with the engaging groove of the body holder of the assembling base. The trigger component is configured to be pressed away from the slit to drive the body holder for releasing an engagement between the engaging groove of the body holder and the locking rib of the body.

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

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## Description

### BRIEF DESCRIPTION OF THE DRAWINGS

- (1) FIG. 1 is a perspective view of a first embodiment of a filter holder in accordance with the present invention;
- (2) FIG. 2 is a side view of the filter holder in FIG. 1;
- (3) FIG. 3 is an exploded perspective view of the filter holder in FIG. 1;
- (4) FIG. 4 is an operational side view of the filter holder in FIG. 1 showing that the filter holder is fixed on a bracket and is connected with a filter cartridge;
- (5) FIG. 5 is an operational side view of the filter holder in FIG. 4 showing that a trigger component is pressed;
- (6) FIG. 6 is an operational side view of the filter holder in FIG. 4 showing that a body is rotated relative to the assembling base;
- (7) FIG. 7 is an operational side view of the filter holder in FIG. 4 showing that the filter cartridge is detached from the body;
- (8) FIG. 8 is an operational side view of a second embodiment of a filter holder in accordance with the present invention; and
- (9) FIG. 9 is a side view of a conventional filter unit in accordance with a prior art.

### DETAILED DESCRIPTION OF PREFERRED EMBODIMENT

(10) With reference to FIGS. 1 to 4, a first embodiment of a filter holder **100** in accordance with the present invention is configured to be fixed to a bracket **50** and be detachably connected to a filter cartridge **60**. The filter holder **100** comprises an assembling base **10**, a trigger component **20**, and a body **30**.

(11) The assembling base **10** is configured to be fixed to the bracket **50** and includes a mounting portion **11** and a body holder **13**. The mounting portion **11** is configured to be fixed to the bracket **50**. The mounting portion **11** may be fastened on the bracket **50** via fasteners or engaging structures. In the first embodiment, the mounting portion **11** includes at least one clip portion **113**

for fastening to the bracket **50**. Each clip portion **113** has a hooking groove **114** to allow an edge of the bracket **50** to be inserted into the hooking groove **114**.

(12) The body holder **13** is configured to hold the body **30**, is integrally formed with the mounting portion **11**, and has a connecting hole **132**, a slit **134**, a blocking end **133**, and an engaging groove **136**. The connecting hole **132** is transversally formed through the body holder **13**. The slit **134** is transversally formed through the body holder **13**, is formed through an external surface and an internal surface of the body holder **13**, and communicates with the connecting hole **132** and a space outside the body holder **13**. The blocking end **133** is located at a side of the slit **134**. The engaging groove **136** is recessed in the body holder **13**, communicates with the connecting hole **132**, and is spaced apart from the slit **134** at an angular interval.

(13) The trigger component **20** is connected to the body holder **13** of the assembling base **10** and is adjacent to the blocking end **133**. Preferably, the assembling base **10** includes two sub-bases **15** transversally spaced apart from each other. The mounting portion **11** and the body holder **13** are formed at the two sub-bases **15**. The trigger component **20** is connected to the two sub-bases **15**. The trigger component **20** has a recess **22** formed in a side thereof facing the blocking end **133** and located between the two sub-bases **15**. A user can press the trigger component **20** at the recess **22**. The mounting portion **11** includes multiple clip portions **113** respectively formed at the two sub-bases **15**. Each sub-base **15** includes two of the clip portions **113** respectively formed at opposite two sides of the sub-base **15**. A spacing groove **14** is formed between one of the two clip portions **113** and the body holder **13**. The spacing groove **14** provides a deformation space for the clip portion **113**.

(14) The body **30** is rotatably connected to the assembling base **10** and includes a cap **31**, a connecting tube **33**, and a locking rib **35**. The cap **31** is configured to be connected to the filter cartridge **60** and is located below the body holder **13**. The connecting tube **33** is formed on a top of the cap **31** and has an inlet end **331** and an outlet end **332** at opposite two ends of the connecting tube **33**. Fluid flows into the connecting tube **33** via the inlet end **331**, flows through the filter cartridge **60** to be filtered by the filter cartridge **60**, and flows out from the connecting tube **33** via the outlet end **332**. The connecting tube **33** is inserted into the connecting hole **132** of the body holder **13** and is able to be rotated relative to the body holder **13**. The locking rib **35** protrudes from an external peripheral surface of the connecting tube **33**.

(15) With reference to FIGS. 2 and 6, the body **30** has an initial position and a locking position. As shown in FIG. 2, when the body **30** is in the initial position, the locking rib **35** is located in the slit **134** of the body holder **13** and is blocked by the blocking end **133** of the body holder **13**. As shown in FIG. 6, when the body **30** is in the locking position, the locking rib **35** is located in and engaged with the engaging groove **136** of the body holder **13**.

(16) With reference to FIGS. 5 and 6, when the trigger component **20** is pressed to move away from the slit **134**, the body holder **13** is driven by the trigger component **20** to release the blocking end **133** from blocking the locking rib **35** or to release the engagement between the engaging groove **136** and the locking rib **35**, so the connecting tube **33** of the body **30** can be rotated relative to the body holder **13** to turn the body **30** from the initial position to the locking position, or from the locking position to the initial position.

(17) With reference to FIGS. 5 to 7, to replace the filter cartridge **60**, the user can press the trigger component **20** away from the slit **134** to release the blocking end **133** from blocking the locking rib **35** or can directly turn the filter cartridge **60** to force the locking rib **35** to pass through the blocking end **133** to adjust an orientation of the body **30** and to turn the filter cartridge **60** away from the ground. The body **30** can be rotated to the locking position such that the locking rib **35** engages with the engaging groove **136** to fix the orientation of the body **30**, hereby increasing a room for detaching the filter cartridge **60** from the filter holder **100** and conveniently replacing the filter cartridge **60**. After the filter cartridge **60** is replaced, the user presses the trigger component **20** away from the slit **134** to release the engagement between the engaging groove **136** and the locking

rib **35**, and turns the filter cartridge **60** back to the initial position. In the first embodiment, the blocking end **133** and the trigger component **20** are located at a rear side of the slit **134**, so the user can press the trigger component **20** backwardly to release the engagement between the locking rib **35** and the engaging groove **136**. In another embodiment, the blocking end **133** and the trigger component **20** may be located at a front side of the slit **134**, so the user can press the trigger forwardly to release the engagement between the locking rib **35** and the engaging groove **136**.

(18) With reference to FIG. **8**, in the second embodiment, a bottom of the body holder **13** of the assembling base **10** is arched, so the body **30** can be rotated clockwise and counterclockwise. With reference to FIG. **2**, in the first embodiment, the assembling base **10** may include a stopping block **17** protruding from a bottom of the body holder **13** at a side of the body holder **13** to block the cap **31**. So the cap **31** is prevented from being turned toward the side where the stopping block **17** is located. Therefore, the body **30** can only be unidirectionally rotated relative to the assembling base **10**.

(19) With such arrangement, to replace the filter cartridge **60**, the filter cartridge **60** can be rotated relative to the bracket **50** with the filter holder **100** of the present invention to move away from the ground, hereby increasing room for moving the filter cartridge **60** away from the filter holder **100** as the filter cartridge **60** is detached from the filter holder **100**. Accordingly, the user can conveniently and easily replace the filter cartridge **60** from the filter holder **100** fixed on the bracket **50**.

## Claims

1. A filter holder comprising: an assembling base including: a mounting portion configured to be fixed to a bracket; and a body holder having: a connecting hole transversally formed through the body holder; a slit transversally formed through the body holder, formed through an external surface and an internal surface of the body holder, and communicating with the connecting hole and an outside of the body holder; a blocking end located at a side of the slit; and an engaging groove recessed in the body holder, communicating with the connecting hole, and spaced apart from the slit at an angular interval; a trigger component connected to the body holder of the assembling base and being adjacent to the blocking end; and a body rotatably connected to the assembling base and including: a cap configured to be connected to a filter cartridge; a connecting tube formed at a top of the cap and inserted into the connecting hole of the body holder; and a locking rib protruding from an external peripheral surface of the connecting tube; wherein the body has an initial position and a locking position; when the body is in the initial position, the locking rib of the body is located in the slit of the body holder of the assembling base; when the body is in the locking position, the locking rib is located in and engaged with the engaging groove of the body holder of the assembling base; the trigger component is configured to be pressed away from the slit to drive the body holder for releasing an engagement between the engaging groove of the body holder and the locking rib of the body.
2. The filter holder as claimed in claim 1, wherein the assembling base includes two sub-bases transversally spaced apart from each other; the mounting portion and the body holder are formed at the two sub-bases; the trigger component is connected to the two sub-bases.
3. The filter holder as claimed in claim 1, wherein the mounting portion of the assembling base includes at least one clip portion for fastening to the bracket.
4. The filter holder as claimed in claim 2, wherein the mounting portion of the assembling base includes multiple clip portions for fastening to the bracket; and the multiple clip portions are respectively formed at the two sub-bases.
5. The filter holder as claimed in claim 4, wherein each of the two sub-bases includes two of the multiple clip portions respectively formed at opposite two sides of the sub-base; and a spacing groove is formed between one of the two clip portions of each of the two sub-bases and the body

holder.

6. The filter holder as claimed in claim 1, wherein the assembling base includes a stopping block protruding from a bottom of the body holder and located at a side of the body holder to block the cap of the body.

7. The filter holder as claimed in claim 2, wherein the assembling base includes a stopping block protruding from a bottom of the body holder and located at a side of the body holder to block the cap of the body.

8. The filter holder as claimed in claim 3, wherein the assembling base includes a stopping block protruding from a bottom of the body holder and located at a side of the body holder to block the cap of the body.

9. The filter holder as claimed in claim 4, wherein the assembling base includes a stopping block protruding from a bottom of the body holder and located at a side of the body holder to block the cap of the body.

10. The filter holder as claimed in claim 5, wherein the assembling base includes a stopping block protruding from a bottom of the body holder and located at a side of the body holder to block the cap of the body.

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