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Inventor(s)	Yang; Hao-Wei et al.

Telescopic door stop device

Abstract

A telescopic door stop device includes a tube assembly with a first tube and a second tube. A connecting tube assembly includes a first connecting member and a second connecting member respectively connected to first and second tubes. The first connecting member is detachably connected to the second connecting member. The first connecting member has an engaging part which is connected to an engaging groove of the second connecting member. Two rotational grooves respectively extend from the engaging groove. When the engaging part is inserted into the engaging groove and rotated into the rotational grooves, the first connecting member and the second connecting member are mutually locked to connect the first tube to the second tube. A stop assembly includes a door stop element and a door supporting element respectively connected to two ends of the tube assembly.

Inventors: **Yang; Hao-Wei (Changhua, TW), Yang; Tzu-Yi (Changhua, TW)**

Applicant: **Yang; Hao-Wei** (Changhua, TW); **Yang; Tzu-Yi** (Changhua, TW)

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Primary Examiner: Williams; Mark A

Background/Summary

FIELD OF THE INVENTION

(1) The present invention relates to a security device, and more particularly, to a telescopic door stop device.

BACKGROUND OF THE INVENTION

(2) In recent years, there has been an increasing number of home burglaries, leading to the development of various forms of door security device. The most common anti-theft device involves using a door barricade placed below the doorknob inside the house. Existing door barricades generally consist of a rod, a blocking component, and a support component. The blocking component is positioned to block against the doorknob, while the support component braces against the floor, causing the rod to support at a slight angle between the door and the floor. This prevents the doorknob from being turned, thereby thwarting intruders from unlocking the door from the outside.

(3) The present invention intends to provide a telescopic door stop device to eliminate the shortcomings mentioned above.

SUMMARY OF THE INVENTION

(4) The present invention relates to a telescopic door stop device with a rotary connection, and comprises a tube assembly with mutually detachable first tube and second tube. A connecting tube assembly includes a first connecting member connected to the first tube, and a second connecting member connected to the second tube. The first connecting member is detachably connected to the

second connecting member. The first connecting member has an engaging part, and the second connecting member has an engaging groove. Two rotational grooves respectively extend from the engaging groove. When the engaging part is inserted into the engaging groove and rotated into the rotational grooves, the first connecting member and the second connecting member are mutually locked in a non-rotatable position to connect the first tube to the second tube. A stop assembly includes a first portion and a second portion respectively inserted into the first tube and the second tube. The first portion includes a door stop element, and the second portion includes a door supporting element.

(5) The primary object of the present invention is to provide a telescopic door stop device which is able to be assembled and disassembled by a rotation operation so as to adjust a length of the telescopic stop device, and also is convenience for storage.

(6) The present invention will become more obvious from the following description when taken in connection with the accompanying drawings which show, for purposes of illustration only, a preferred embodiment in accordance with the present invention.

Description

BRIEF DESCRIPTION OF THE DRAWINGS

(1) FIG. **1** is an exploded view to show the telescopic door stop device of the present invention;

(2) FIG. **2** shows the connecting tube assembly of the telescopic door stop device of the present invention;

(3) FIG. **3** shows the connecting tube assembly from another angle;

(4) FIG. **4** is another exploded view of the telescopic door stop device of the present invention;

(5) FIG. **5** is a perspective view to show the telescopic door stop device of the present invention;

(6) FIG. **6** shows that the engaging part of the first connecting member is located in the engaging groove of the second connecting member, wherein the first connecting member has not rotated relative to the second connecting member;

(7) FIG. **7** shows that the engaging part of the first connecting member is rotated to connect the first connecting member to the second connecting member;

(8) FIG. **8** illustrates the use of the telescopic door stop device of the present invention;

(9) FIG. **9** shows a second embodiment of the telescopic door stop device of the present invention;

(10) FIG. **10** shows the first connecting member and the second connecting member of the second embodiment of the telescopic door stop device of the present invention;

(11) FIG. **11** shows that the engaging part of the first connecting member is located in the engaging groove of the second connecting member of the second embodiment, the first connecting member has not rotated relative to the second connecting member, and

(12) FIG. **12** shows that the engaging part of the first connecting member of the second embodiment is rotated to connect the first connecting member to the second connecting member.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

(13) Referring to FIGS. **1-12**, the telescopic door stop device **1** with a rotary connection of the present invention comprises a tube assembly **2** with mutually detachable first tube **20** and second tube **21**. The first tube **20** and the second tube **21** each have corresponding first opening **200** and second opening **210** defined through a wall thereof. Furthermore, the first tube **20** includes a first fixing hole **201** located close to the first opening **200**, and the second tube **21** includes a second fixing hole **211** located close to the second opening **210**. The first tube **20** and the second tube **21** have multiple positioning holes **202**, **212** respectively.

(14) A connecting tube assembly **3** includes a first connecting member **30** detachably connected to the first tube **20**, and a second connecting member **31** detachably connected to the second tube **21**. The first connecting member **30** has an engaging part **301**. The first connecting member **30** has a

first base **300**. The engaging part **301** and a first tubular part **302** are positioned on two opposite sides of the first base **300** of the first connecting member **30**. The first tubular part **302** extends from the first base **300** and is inserted into the first opening **200** so that the first base **300** is abutted against the first opening **200** of the first tube **20**, and the engaging part **301** is exposed beyond the first tube **20**. The first tubular part **302** includes a first protrusion **3020** protruding outward therefrom. The first protrusion **3020** is inserted into the first fixing hole **201** to connect the first connecting member **30** to the first tube **20**. The engaging part **301** of the first connecting member **30** is U-shaped part on the first base **300**. The engaging part **301** includes two first segments **303** and a second segments **304** connecting between the two first segments **303**. A space **305** is formed between the engaging part **301** and the first base **300**.

(15) The second connecting member **31** has a second base **310**. The second connecting member **31** has a second tubular part **311** extending from an upper side of the second base **310** and inserted into the second opening **210** such that the second base **310** is abutted against the second opening **210** of the second tube **21**. The second tubular part **311** includes a second protrusion **3110** protruding outward therefrom. The second protrusion **3110** is inserted into second fixing hole **211** to connect the second connecting member **31** to the second tube **21**. The second connecting member **31** has an engaging groove **313** defined in the second base **310**, and two rotational grooves **318** respectively extending from the engaging groove **313**. When the second tubular part **311** of the second base **310** and inserted into the second opening **210**, the engaging groove **313** together with the two rotational grooves **318** are exposed to the engaging part **301**. Specifically, the second base **310** has two plates **312**, and the engaging groove **313** is formed between the two plates **312**. Each of the plates **312** includes a stepped first stop portion **314** and a second stop portion **315**. The thickness of the second stop portion **315** is less than that of the stepped first stop portion **314**. The second stop portion **315** has a linear end surface **316** and a curved end surface **317** corresponding to the rotational groove **318**. The rotational groove **318** forms a closed end **319** at its end, and the rotational groove **318** communicates with the engaging groove **313**.

(16) A stop assembly **4** includes a first portion and a second portion respectively inserted into the first tube **20** and the second tube **21**. The first portion includes a door stop element **410**, and the second portion includes a door supporting element **400** as shown in FIG. **1**. The door supporting element **400** is connected to a first rod **40** which is inserted into the first tube **20** and located opposite to the first connecting member **30**. The door stop element **410** is connected to a second rod **41** which is inserted into the second tube **21** and located opposite to the second connecting member **31**. The first rod **40** includes a first positioning part **401** which extends one of the positioning holes **202** of the first tube **20**. The second rod **41** includes a second positioning part **411** which extends one of the positioning holes **212** of the second tube **21** as shown in FIG. **1**.

(17) The first connecting member **30** is connected to the second connecting member **31** so that the first base **300** and the second base **310** are in close contact. The engaging part **301** of the first connecting member **30** is inserted into the engaging groove **313** of the second connecting member **31** (as shown in FIG. **6**). Subsequently, rotate the first tube **20** and the second tube **21** simultaneously in opposite directions (in this embodiment, the first tube **20** rotates clockwise while the second tube **21** rotates counterclockwise). When the engaging part **301** of the first connecting member **30** engages with the engaging groove **313** of the second connecting member **31** via the rotational space **305**, and rotates into the position in the rotational groove **318** (as shown in FIG. **7**), the inner surface of the second segment **304** of the engaging part **301** tightly locks against the upper side of the second stop portion **315** of the plate **312**. This establishes a positional relationship between the first connecting member **30** and the second connecting member **31**, completing the assembly of the first tube **20** and the second tube **21**. In this embodiment, the first connecting member **30** and the second connecting member **31** can be either a jointed structure or an integral structure with the first tube **20** and the second tube **21**.

(18) When adjusting the length of the door stop device **1**, press the first and second positioning

parts **401**, **411** of the first rod **40** and the second rod **41** to release them from the positioning relationship with the positioning holes **202**, **212**. This allows the first rod **40** and the second rod **41** to move relative to the first tube **20** and the second tube **21**. In other words, by positioning the first and second positioning parts **401**, **411** in different locations of the first and second positioning holes **202**, **212**, the length of the first rod **40** and the second rod **41** can be adjusted. Once the desired length is achieved, the door supporting element **400** of the first rod **40** can be braced against the ground “G”, while the door stop element **410** of the second rod **41** can be braced against the door handle “T” (as shown in FIG. **8**), thereby preventing thieves from opening the door from the outside.

(19) It is noted that the structure of the door “T1” of different brands is different, and the distance between the door handle “T” and the ground “G” also varies. Through the above explanation, it is evident that the door stop device **1** of the present invention has a modular design rather than an integrated rod body structure. Therefore, when disassembling the first tube **20** and the second tube **21** of the door stop device **1**, both are rotated simultaneously in opposite directions (in this embodiment, the first door tube **20** rotates counterclockwise while the second tube **21** rotates clockwise). This causes the engaging part **301** of the first connecting member **30** to rotate from the position in the rotational groove **318** of the second connecting member **31** to the position in the engaging groove **313**, freeing the second segment **304** of the engaging part **301** from the locking relationship with the second stop portion **315** of the plate **312**. Once the positional relationship between the first connecting member **30** and the second connecting member **31** is released, the first tube **20** and the second tube **21** can be disassembled. Additionally, users can add a third tube **22** between the first tube **20** and the second tube **21** (as shown in FIG. **9**) according to their actual needs, increasing the overall length of the tube assembly **2**. The assembly and disassembly method between the third tube **22** and the first tube **20** and the second tube **21** is the same as described above.

(20) In addition, an inner wall surface of the second connecting member **31** has an elastic urging assembly **5** positioned relative to the rotational groove **318** and close to the closed end **319**. The elastic urging assembly **5** contacts against an outer surface of the second segments **303** of the engaging part **301** to connect the first connecting member **30** to the second connecting member **31**. The elastic urging assembly **5** comprises an elastic member **50** and an end member **51**. The inner wall surface of the second connecting member **31** includes a receiving groove **3100**, the elastic member **50** is received in the receiving groove **3100**, and the end clamping member **51** partially protrudes from the rotational groove **318** as shown in FIG. **10**. When the engaging part **301** of the first connecting member **30** rotates from the position in the engaging groove **313** to the position in the rotational groove **318**, the outer surface of the first segment **303** of the engaging part **301** and the end member **51** of the elastic urging assembly **5** mutually tighten against each other (as shown in FIG. **12**). In other words, the elastic urging assembly **5** enhances the tight interlocking relationship between the first connecting member **30** and the second connecting member **31**.

(21) While we have shown and described the embodiment in accordance with the present invention, it should be clear to those skilled in the art that further embodiments may be made without departing from the scope of the present invention.

Claims

1. A door stop device (**1**) with a rotary connection, the door stop device comprising: a tube assembly (**2**) comprising a first tube (**20**) and a second tube (**21**); a connecting tube assembly (**3**) including a first connecting member (**30**) detachably connected to the first tube (**20**), and a second connecting member (**31**) detachably connected to the second tube (**21**), the first connecting member (**30**) detachably connected to the second connecting member (**31**), the first connecting member (**30**) having an engaging part (**301**), the second connecting member (**31**) having an engaging groove

(**313**), two rotational grooves (**318**) respectively extending from the engaging groove (**313**), when the engaging part (**301**) is inserted into the engaging groove (**313**) and rotated into the rotational grooves (**318**), the first connecting member (**30**) and the second connecting member (**31**) are mutually locked in a non-rotatable position to connected the first tube (**20**) to the second tube (**21**), and a stop assembly (**4**) including a door stop element (**410**) inserted into the first tube (**20**), a door supporting element (**400**) inserted into the second tube (**21**).

2. The door stop device with a rotary connection as claimed in claim 1, wherein the first tube (**20**) and the second tube (**21**) each have corresponding first opening (**200**) and second opening (**210**), the first connecting member (**30**) having a first tubular part (**302**) located corresponding to the first opening (**200**) and inserted into the first opening (**200**), the second connecting member (**31**) having a second tubular part (**311**) located corresponding to the second opening (**210**) and inserted into the second opening (**210**), the first tubular part (**302**) includes a first protrusion (**3020**), the second tubular part (**311**) includes a second protrusion (**3110**), the first tube (**20**) includes a first fixing hole (**201**) in which the first protrusion (**3020**) is inserted, the second tube (**21**) includes a second fixing hole (**211**) in which the second protrusion (**3110**) is inserted.

3. The door stop device with a rotary connection as claimed in claim 1, wherein the first tube (**20**) and the second tube (**21**) have multiple positioning holes (**202**, **212**) respectively, the door supporting element (**400**) is connected to a first rod (**40**) which is inserted into the first tube (**20**) and located opposite to the first connecting member (**30**), the door stop element (**410**) is connected to a second rod (**41**) which is inserted into the second tube (**21**) and located opposite to the second connecting member (**31**), the first rod (**40**) includes a first positioning part (**401**) which extends one of the positioning holes (**202**) of the first tube (**20**), the second rod (**41**) includes a second positioning part (**411**) which extends one of the positioning holes (**212**) of the second tube (**21**).

4. The door stop device with a rotary connection as claimed in claim 2, wherein the first connecting member (**30**) has a first base (**300**), the second connecting member (**31**) has a second base (**310**), the engaging part (**301**) and the first connecting part (**302**) of the first connecting member (**30**) are positioned on two opposite sides of the first base (**300**), the second tubular part (**311**) is positioned on an upper side of the second base (**310**) of the second connecting member (**31**), the first base (**300**) and the second base (**310**) are respectively abutted against the first opening (**200**) of the first tube (**20**) and the second opening (**210**) of the second tube (**21**).

5. The door stop device with a rotary connection as claimed in claim 4, wherein the engaging part (**301**) of the first connecting member (**30**) is U-shaped part on the first base (**300**), the engaging part (**301**) includes two first segments (**303**) and a second segments (**304**) connecting between the two first segments (**303**), a space (**305**) is formed between the engaging part (**301**) and the first base (**300**), the second base (**310**) has two plates (**312**), the engaging groove (**313**) is formed between the two plates (**312**), each of the plates (**312**) includes a stepped first stop portion (**314**) and a second stop portion (**315**), the second stop portion (**315**) has a linear end surface (**316**) and a curved end surface (**317**) corresponding to the rotational groove (**318**), the rotational groove (**318**) forms a closed end (**319**) at its end, and the rotational groove (**318**) communicates with the engaging groove (**313**).

6. The door stop device with a rotary connection as claimed in claim 5, wherein a thickness of the second stop portion (**315**) is less than that of the stepped first stop portion (**314**), when the first base (**300**) of the first connecting member (**30**) and the second base (**310**) of the second connecting member (**31**) are engaged with each other, the engaging part (**301**) of the first connecting member (**30**) rotates into the rotational groove (**318**) of the engaging groove (**313**) of the second connecting member (**31**) through the rotational space (**305**), the second segments (**304**) of the engaging part (**301**) forms a locking relationship with the second stop portion (**315**) to position the first connecting member (**30**) relative to the second connecting member (**31**).

7. The door stop device with a rotary connection as claimed in claim 5, wherein an inner wall surface of the second connecting member (**31**) has an elastic urging assembly (**5**) positioned

relative to the rotational groove (**318**) and close to the closed end (**319**), the elastic urging assembly (**5**) contacts against an outer surface of the second segments (**303**) of the engaging part (**301**) to connect the first connecting member (**30**) to the second connecting member (**31**).

8. The door stop device with a rotary connection as claimed in claim 7, wherein the elastic urging assembly (**5**) comprises an elastic member (**50**) and an end member (**51**), the inner wall surface of the second connecting member (**31**) includes a receiving groove (**3100**), the elastic member (**50**) is received in the receiving groove (**3100**), the end clamping member (**51**) partially protrudes from the rotational groove (**318**).

9. The door stop device with a rotary connection as claimed in claim 1, wherein the tube assembly (**2**) includes a third tube (**22**) interconnected between the first tube (**20**) and the second tube (**21**).

10. The door stop device with a rotary connection as claimed in claim 1, wherein the first connecting member (**30**) and the second connecting member (**31**) each form an integral structure with the first tube (**20**) and the second tube (**21**) respectively.