Aug. 18, 1970 W. E. CROSBY ET AL 3,524,336

KEY HOLDER

Filed March 15, 1968

Fig. 2

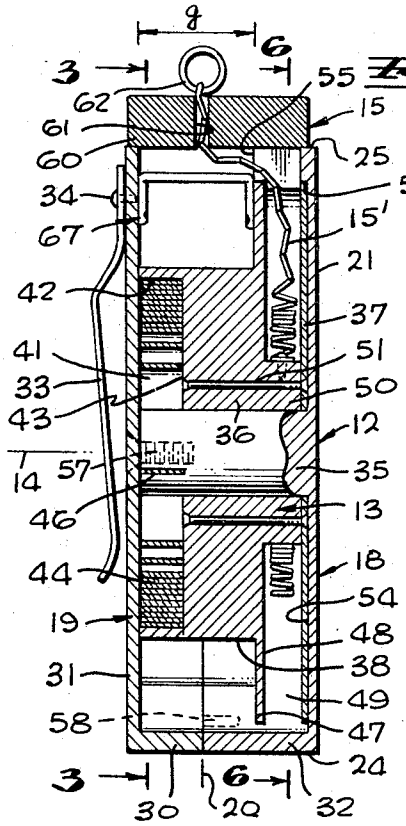


Fig. 10

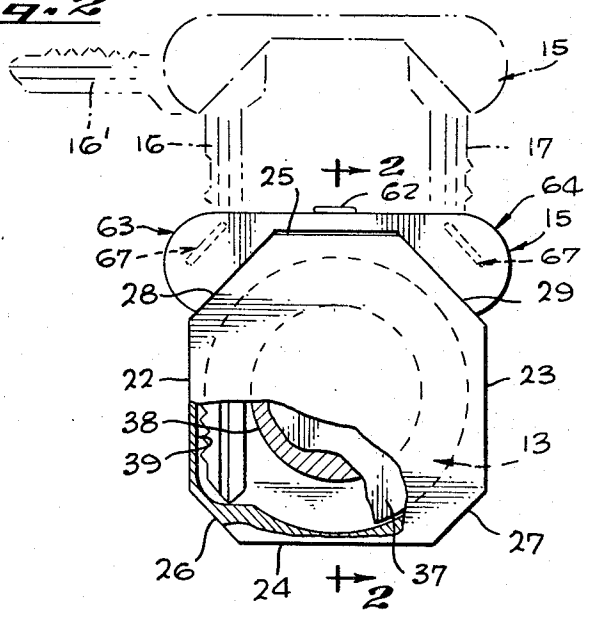


Fig. 4

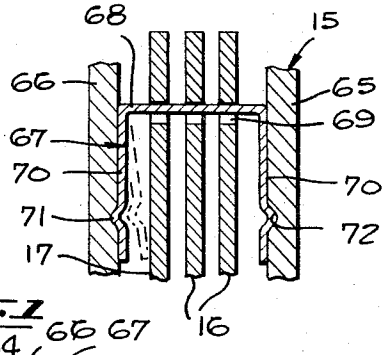


Fig. 3

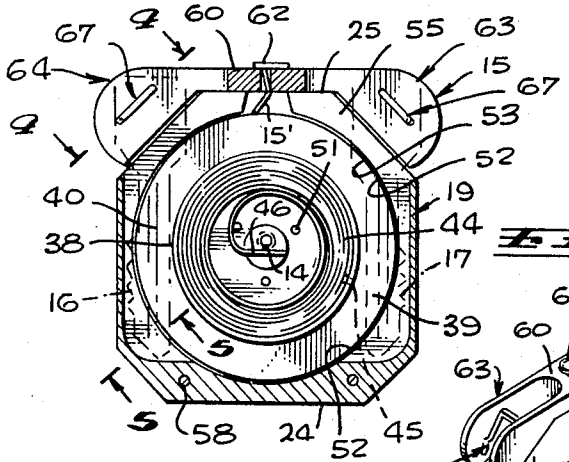


Fig. 1

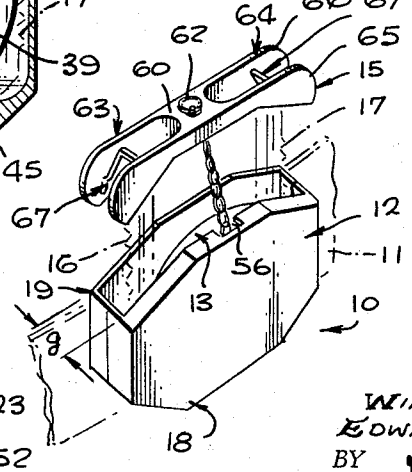


Fig. 5

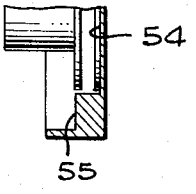
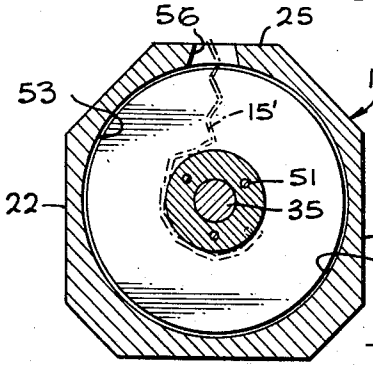


Fig. 6



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3,524,336

KEY HOLDER

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U.S. Cl. 70—457 13 Claims

ABSTRACT OF THE DISCLOSURE

A key holder having a housing containing a spring urged reel about which a key carrying chain is windable to retract the chain, with the keys being carried by a retaining element at the outer end of the chain and being retractable into compartments in the housing located at opposite sides of the spring containing portion of the reel.

BACKGROUND OF THE INVENTION

This invention relates to key holders of the general type including a chain or other elongated flexible element which carries the keys and is windable about a reel to retract the keys when not in use.

There have in the past been devised various reel type key holders of the above mentioned general type, with the winding reel usually mounted in a housing which is connectible to the belt of a wearer. One disadvantage of these prior devices has resided in the inconvenient manner in which the carried keys dangle loosely from the reel device when in retracted condition. These dangling keys present an undesirable appearance, and further may cause wear of a person's clothing by continually rubbing against that clothing. Additionally, the exposed loosely carried keys may scratch or otherwise damage furniture, or catch on such furniture or other articles.

SUMMARY OF THE INVENTION

A key carrying reel device embodying the present invention includes a housing structure within which the reel is rotatably mounted, and which forms within the housing a compartment or compartments within which the keys are at least partially receivable in the retracted condition of the chain or other flexible element. Thus, the keys are protected against contact with clothing, furniture, or the like, and are so retained as to avoid the undesirable appearance usually associated with devices of this character. Preferably, the keys are received radially between a portion of the reel which contains a retracting spring, and a peripheral wall of the reel. The reel may have a relatively large diameter portion adjacent this spring carrying portion of the reel and forming a groove within which the chain is windable, with the keys in their retracted position being receivable axially opposite this larger diameter portion of the reel. A key retaining element carried at the outer end of the chain or other flexible element may have two oppositely projecting portions for carrying two sets of keys, with these two sets being receivable at diametrically opposite sides of the spring containing portion of the reel in their retracted positions.

Certain additional features of the invention relate to a unique manner of attaching a group of keys to a retaining element, specifically by means of a U-shaped spring clip, having two arms which are confined with the keys between two spaced wall surfaces, with these two arms of the spring clip bearing laterally against the two wall surfaces respectively and engaging them in a relation releasably securing the clip and carried keys against detachment from the rest of the device. The interfitting relation between the clip and engaged wall surfaces may be by

provision of projections on one of the engaging parts received within recesses in the other engaging part.

BRIEF DESCRIPTION OF THE DRAWING

The above and other features and objects of the invention will be better understood from the following detailed description of the typical embodiment illustrated in the accompanying drawing, in which:

FIG. 1 is a perspective representation of a key holder embodying the invention, as it appears when attached to the belt of a wearer;

FIG. 1*a* is a front view of the device;

FIG. 2 is an enlarged vertical section taken on line 2—2 of FIG. 1;

FIG. 3 is a section on line 3—3 of FIG. 2;

FIGS. 4 and 5 are enlarged fragmentary sections taken on lines 4—4 and 5—5 of FIG. 3; and

FIG. 6 is a section on line 6—6 of FIG. 2.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring first to FIG. 1, I have shown at **10** a key holder constructed in accordance with the invention, and adapted to be detachably carried on the belt **11** of a user. The holder includes a housing **12** containing a reel **13** mounted to turn about a horizontal axis **14** (FIGS. 2 and 3). The reel winds a flexible chain **15'** which carries a key retaining element **15** to which there are connectible two sets of keys **16** and **17**.

As seen best in FIG. 2, the housing **12** is formed of two front and rear sections **18** and **19** which meet each other in a vertical separation plane **20** disposed transversely of axis **14**. More particularly, the forward section **18** has a vertical planar front wall **21** having the peripheral outline illustrated in FIG. 1*a*. Specifically, this front wall, as well as the entire housing have two spaced parallel vertical opposite side edges **22** and **23**, as well as a horizontal edge **24** and horizontal top edge **25**, and inclined edges **26**, **27**, **28**, and **29**. Similarly rear section **19** has a vertical planar back wall **31** spaced from and parallel to front wall **21** and having this same polygonal shape.

Extending forwardly from the rear wall **31**, the rear section **19** of the housing carries an axially turned peripheral wall **30** having the vertical cross section illustrated in FIG. 3, and which, as seen clearly in FIG. 3, extends along the various edges **22**, **23**, **24**, **26**, and **27**, but is interrupted at and does not extend along the upper edges **25**, **28**, and **29** of the housing. This peripheral wall **30** terminates forwardly at the previously mentioned vertical plane **20**.

The front wall **21** of the housing carries a similar rearwardly directed integral peripheral wall **32** which has the same vertical cross section as wall **30** of FIG. 3, to meet that wall **30** at the vertical housing separation plane **20** in a complementary relation. As in the case of the wall **30**, the wall **32** extends along the side and bottom edges of the housing, but does not extend across the top edges of the housing, corresponding to edges **25**, **28**, and **29** of FIG. 1. At its rear side, the vertical wall **31** of rear housing section **19** carries a spring clip **33**, formed of leaf spring material secured rigidly at **34** to wall **31**, and extending downwardly adjacent the wall to provide a clip which can be slipped over the belt **11** of the user to attach the device thereto.

The reel **13** may be formed of two sections **36** and **37**, the former of which has an outer cylindrical surface **38** of a diameter substantially less than the minimum diameter of the peripheral housing flanges or walls **30** and **32**, to be spaced radially a substantial distance from those flanges or walls **30** and **32**, and thereby define between

those walls and outer surface 38 two compartments 39 and 40 (FIG. 3), at diametrically opposite sides of the reel and of axis 14, to receive the two sets of keys 16 and 17 in their retracted positions. Radially inwardly of surface 38, section 36 of the reel contains a cylindrical rearwardly facing recess 41, defined by a cylindrical outer surface 42 and a transverse planar front wall 43, and containing a coil spring 44 for yieldingly urging the reel rotatively in a retracting direction. One end of the coil spring is secured permanently to reel section 36, as by a rivet 45, while the opposite end of the spring may extend through a slit 46 in a central boss or post 35, in a manner retaining that end against rotation. The boss 35 may be carried by and be formed integrally with front wall 21 of the housing, and be externally cylindrical and centered about axis 14.

Forwardly of the outer cylindrical surface 38 of the rear section 36 of the reel, this reel section has a radially outwardly projecting flange 47, having a planar annular surface 48 at its forward side defining one side of an annular groove 49 within which chain 15' is wound. The second section 37 of the reel may take the form of an annular disc of sheet metal having an external diameter corresponding to that of flange 47 of section 36, and rigidly secured to an axially projecting annular portion 50 of rear section 36, as by extended rivets 51.

The chain winding forward portion of the reel which forms chain receiving groove 49 is desirably confined and received rotatably within a cylindrical recess 52 formed in the rear face of forward wall 21 of the forward housing section 19. More particularly, this recess may be considered as having a cylindrical radially outer wall 53 (see FIGS. 3, 5 and 6) and a planar vertical wall 54 disposed transversely of axis 14. About recess 52, the forward wall 21 of the housing has a rearwardly facing planar surface 55 (FIGS. 3 and 5), disposed transversely of axis 14, and lying in a plane essentially flush with the rear surface of flange 47 of the reel. This surface 55 and the peripheral wall 53 of recess 52 are interrupted at the top of the housing, to form a passage 56 through which the chain extends upwardly from recess 52 for connection to key retaining element 15.

To describe the interior of the housing in different terms for clarity, it is noted that the housing has the internal cross section illustrated in FIG. 3 through the entire axial distance from rear wall 31 of the housing to the plane of surface 55, and has the cross section of FIG. 6 forwardly of surface 55 to the front of the forward disc portion 37 of the reel.

The rear housing section 19 may be secured to the forward section 18 by a screw 57 (FIG. 2) extending through the center of the rear wall 31 of the housing, and threadedly connecting into boss or post 35 of the forward housing section. Also, one of the two housing sections may have two or more locating pins 58 projecting parallel to axis 14 and receivable within locating recesses formed in the other section, to prevent shifting movement of one of the sections relative to the other transversely of axis 14.

The key retaining element 15 has a central horizontally extending portion 60 to which chain 15' is connected, as by extension of the chain through a central aperture 61 in portion 60, with an enlargement 62 on the chain being received above this aperture. Extending in two opposite directions from central portion 60, the retaining element 15 has two projections 63 and 64, to which the two sets of keys 16 and 17 respectively are connected. Each of these projections 63 and 64 desirably consists of two spaced planar vertically extending parallel arms 65 and 66, spaced essentially in correspondence with the axial width of the key receiving gap *g* between the upper portion of the forward surface of rear wall 31 of the housing and the upper portion of the opposed rearwardly facing surface 55 of the forward wall 21 of the housing

(see top of FIG. 2). Between each of these pairs of walls 65 and 66, of the two projections 63 and 64, there is provided a key holding spring clip 67 (FIG. 4), formed of leaf spring material having the essentially U-shaped configuration of FIG. 4. More particularly, each of these clips 67 has a cross piece portion 68 which extends through the openings 69 in a series of keys 16 or 17, to hold those keys, and with the two arms 70 of the U-shaped clip projecting parallel to one another at opposite sides of the keys and spaced for reception between the two coacting side walls 65 and 66 of retaining element 15. The arms 70 of the spring clip are deformed to have small circular projections 71 receivable within correspondingly shaped circular recesses 72 formed in the walls 65 and 66, with the resilience of the spring clip urging projections 71 into interfitting engagement with recesses 72, to releasably hold the clip in its FIG. 4 position of assembled relationship between walls 65 and 66. As will be apparent, when it is desired to remove the keys, sufficient force may be exerted against them to move projections 71 out of recesses 72, and allow removal of an entire group of the keys from the retaining element 15 with one of the clips 67.

To now describe the manner of use of the device, assume that the two sets of keys 16 and 17 have already been connected to key retaining element 15, at its opposite ends, by two clips of the type illustrated at 67 in FIG. 4. Also assume that the device has been mounted to the belt of a wearer as seen in FIG. 1, and that the two sets of keys 16 and 17 are nested within the two compartments 39 and 40 at opposite sides of the reel. When it is desired to then use one of the keys, the wearer merely pulls upwardly on retaining element 15 to withdraw the keys 16 and 17 from their compartments within the housing, with this withdrawing action being resisted yieldingly by the unwinding of chain 15' from reel 13 against the resistance of spring 44. The particular key which is to be used may be swung about portion 68 of the associated spring clip 47 to an outwardly projecting position in which the key may be inserted into a lock (position 16' of FIG. 1*a*). After use of the key, it and all the other keys may be returned to the downwardly projecting positions of FIGS. 1 and 3 relative to the key retaining element 15, and the latter may be allowed to retract toward housing 12 under the influence of the retracting spring 44, until the two sets of keys ultimately move downwardly at opposite sides of the reel and to the FIG. 3 position of complete retraction. In this condition, the keys are protected within the housing and are hidden from view, and the entire assembly presents an attractive overall external appearance. If it is desired to change one of the keys, or to remove a group of the keys from retaining element 15, this may be done by merely forcing a corresponding one of the clips 67 from its position of retention within element 15, as previously described, and subsequently reinserting the clip and carried keys into position within the retaining element.

What is claimed is:

1. A key holder comprising a housing structure, a reel mounted for rotation about an axis within said housing structure, an elongated flexible element windable about said reel and actuable between a retracted position about the reel and an active position of extension from the reel and housing structure, a key retainer carried by an outer end of the flexible element for movement therewith between said retracted and active positions and having a generally central portion connected to said flexible element with two projections extending in essentially opposite directions therefrom, and means for detachably connecting two sets of keys to said projections respectively, said housing structure forming two compartments at opposite sides of and radially outwardly of a portion of said reel for receiving said two sets of keys respectively in said retracted position of said flexible element and said retainer.

2. A key holder comprising a housing structure, a reel mounted for rotation about an axis within said housing structure, an elongated flexible element windable about said reel and actuable between a retracted position about the reel and an active position of extension from the reel and housing structure, and a key retainer carried by an outer end of the flexible element for movement therewith between said retracted and active positions, said housing structure having two opposite side walls and a peripheral wall extending essentially about said axis, said reel having a portion of relatively large diameter adjacent one of said side walls and forming an essentially annular groove within which said flexible element is windable, said reel having a reduced diameter portion with an essentially circular wall disposed about said axis, there being a retraction spring in said reduced diameter portion of the reel, said key retainer having two oppositely directed projections for detachably carrying two sets of keys respectively, said peripheral wall of the housing being spaced radially outwardly from said essentially circular wall of the reel and defining therewith two compartments at diametrically opposite sides of said reduced diameter portion of the reel for receiving said two sets of keys respectively in retracted position, said peripheral wall of the housing being interrupted at one side to pass said keys into said compartments at opposite sides of said reduced portion of the reel.

3. A key holder as recited in claim 2, in which one of said side walls of said housing structure contains a recess receiving said large diameter portion of the reel and extending peripherally thereabout and about said groove and containing a passage through which said flexible element extends radially outwardly from the recess and groove to the outside of said housing structure.

4. A key holder comprising a housing structure, a reel mounted for rotation about an axis within said housing structure, an elongated flexible element windable about said reel and actuable between a retracted position about the reel and an active position of extension from the reel and housing structure, and a key retainer carried by an outer end of the flexible element for movement therewith between said retracted and active positions and adapted to detachably carry at least one key, said housing structure forming a compartment into which said key is at least partially retractable in said retracted position of the said flexible element and said retainer, said key retainer having two spaced walls, and including a generally U-shaped spring clip for detachably carrying a key or keys between said walls, said clip having two spaced arms at opposite sides of the keys received adjacent the walls respectively and bearing resiliently thereagainst in a relation releasably retaining the clip and keys therebetween.

5. A key holder as recited in claim 4, in which at least one of said arms of said clip has a positioning shoulder structure engageable with a coacting positioning shoulder structure on one of said walls in a relation releasably retaining said clip in a predetermined position between said walls.

6. A key holder as recited in claim 4, in which said two arms of said clip have detenting projections received within detenting recesses in said walls to releasably retain the clip in a predetermined position between the walls.

7. A key holder comprising a housing structure, a reel mounted for rotation about an axis within said housing structure, an elongated flexible element windable about said reel and actuable between a retracted position about the reel and an active position of extension from the reel and housing structure, and a key retainer carried by an outer end of the flexible element for movement therewith between said retracted and active positions and adapted to detachably carry at least one key, said reel having a first portion of relatively large diameter for receiving and winding said flexible element, and a second portion of smaller diameter, said housing structure forming a compartment into which said key is at least partially retractable in said retracted position of said flexible element and said retainer, said compartment being located radially outwardly of and radially opposite said smaller portion of the reel but axially opposite said first and larger portion of the reel.

8. A key holder as recited in claim 7, in which said housing structure has a peripheral wall spaced radially outwardly from said smaller portion of the reel and defining the periphery of said compartment, and has a second wall disposed generally transversely of said axis and spaced axially from and opposite said larger portion of the reel to define a side of the compartment.

9. A key holder as recited in claim 7, including a retraction spring in said smaller portion of the reel for turning the reel in a retracting direction.

10. A key holder comprising a housing structure, a reel mounted for rotation about an axis within said housing structure, an elongated flexible element windable about said reel and actuable between a retracted position about the reel and an active position of extension from the reel and housing structure, and a key retainer carried by an outer end of the flexible element for movement therewith between said retracted and active positions and adapted to detachably carry keys at two different locations, said housing structure forming two compartments at opposite sides of the reel and into which keys connected to the retainer at said two locations respectively are retractable in said retracted position of said flexible element and said retainer.

11. A key holder as recited in claim 10, in which said two compartments are at diametrically opposite sides of said reel and radially opposite it.

12. A key holder comprising a housing structure, a reel mounted for rotation about an axis within said housing structure, an elongated flexible element windable about said reel and actuable between a retracted position about the reel and an active position of extension from the reel and housing structure, and a key retainer carried by an outer end of the flexible element for movement therewith between said retracted and active positions, and adapted to detachably carry at least one key, said housing structure forming a compartment axially opposite a portion of said reel into which a key is at least partially retractable in said retracted position of said flexible element and said retainer, said housing structure having a side wall defining a wall of said compartment and spaced axially from and axially opposite said portion of the reel for reception of said key therebetween.

13. A key holder as recited in claim 12, in which said portion of the reel contains a generally annular groove for receiving said flexible element and at least partially located axially opposite said compartment.

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