April 14, 1953 O. SEELY 2,634,600

KEY SELECTOR AND CONTAINER

Filed Sept. 30, 1947

Fig. 1.

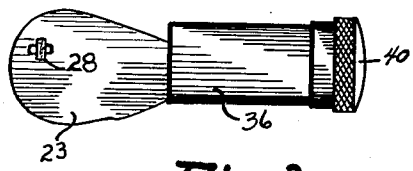


Fig. 2.

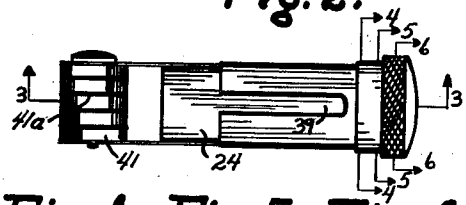


Fig. 3.

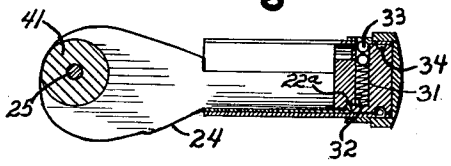


Fig. 4.



Fig. 5.

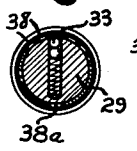


Fig. 6.

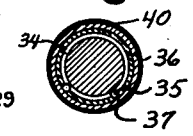


Fig. 7.

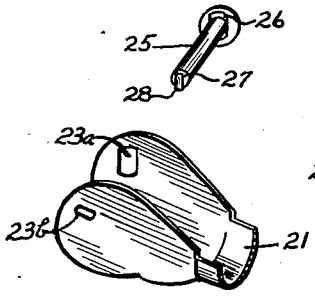


Fig. 8.

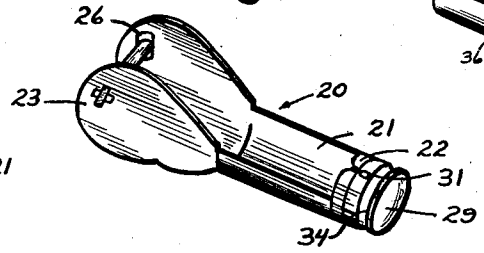


Fig. 9.

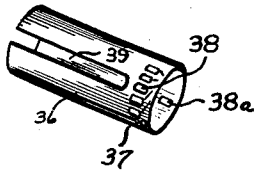


Fig. 10.

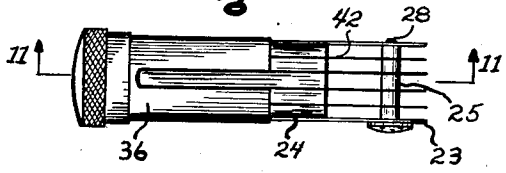


Fig. 11.

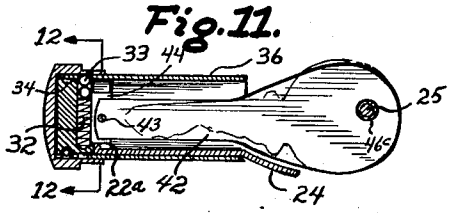


Fig. 13.

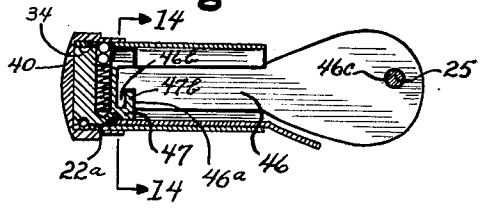


Fig. 14.

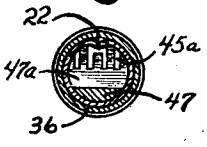
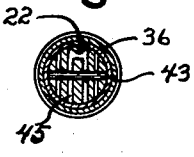


Fig. 12.



INVENTOR.

BY Oliver Seely

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UNITED STATES PATENT OFFICE

2,634,600

KEY SELECTOR AND CONTAINER

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Application September 30, 1947, Serial No. 776,937

4 Claims. (Cl. 70—456)

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This invention relates to improvements in key selector and container, and is generally designed as an improvement upon and modification of the construction disclosed in the patent granted to me November 19, 1946, No. 2,411,168.

In the accompanying drawing, in which similar reference characters indicate similar parts in each of the views,

Figure 1 is a side elevation of the container; the view applies to each of the forms of the invention disclosed herein,

Figure 2 is a top plan view of a container of the simpler type in which the partitions are omitted,

Figure 3 is a vertical longitudinal sectional view of the container type shown in Figure 2,

Figures 4, 5 and 6 are transverse sectional views taken respectively on lines 4—4, 5—5 and 6—6 of Figure 2,

Figure 7 is a fragmentary perspective view of the body portion or shell structure of Figure 2 with the pin formation shown as removed from key-holding position,

Figure 8 is a perspective view of the shell body portion,

Figure 9 is a perspective view of the annular skirt member, with cap removed,

Figure 10 is a top plan view of a container of the preferred type including partitions,

Figure 11 is a longitudinal section on line 11—11 of the container of Figure 10, showing partitions of one form with the butt end section used with such form,

Figure 12 is a transverse section on line 12—12 of Figure 11,

Figure 13 is a longitudinal section similar to Figure 11, but showing a second form of partition with its complemental butt end section, and

Figure 14 is a transverse sectional view taken on line 14—14 of Figure 13.

The invention is being disclosed in two general forms—the preferred form which includes partitions to provide individual pockets for the keys, and the simpler form which omits the partitions; in omitting the partitions the butt end section of the container may also be changed. In other respects the container is generally similar in both forms. Due to the general similarity in structure, the following description will first present the simpler form to bring out the features in common between the two broad forms, this then being followed by the description of the preferred form to bring out the changed construction.

In the key-housing portion of the container assembly, 20 designates the body portion, this

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being in the form of material shaped to the desired form; the shaped member is shown in Figure 8. This portion includes a semi-circular zone 21, open at its top, into which the bit portions of the keys extend, the zone being located at an intermediate portion of the length of such body portion; at one end of the zone 21 the blank includes a pair of tabs 22 and an annular ridge 22a designed to cooperate with a butt end section to be presently described, to anchor portion 20 to such section, while the structure at the other end of zone 21 is in the form of a pair of generally planar members forming side walls 23 spaced apart a distance sufficient to permit of the location of the butt ends of the keys between the walls. Hence the dimensions and contour of such side walls are such as to overlie and protect the opposite sides of a group of keys adapted to be housed therebetween. The portions of walls 23 adjacent zone 21 are bridged at the bottom by a bridging wall 24, this having a length sufficient to provide a stiffening effect while leaving a material length of walls 23 free to be flexed inwardly, as presently described.

The keys are supported with their butt ends located between walls 23, the support being in the form of a removable pin formation 25, shown in Figure 7, and which includes a head and stem with the latter of sufficient length to extend through both walls 23, the latter having openings to permit the passage of the stem. Underlying the head of the pin is a non-circular key portion 26—shown as elongated—adapted to be positioned in an opening 23a of one of the side walls 23, while the free end of the stem is provided with an annular groove 27 spaced from such end, with the portion of the stem between the groove and such end formed to provide a key 28, as by flattening opposite sides; key 28 is preferably of less dimensions than key 26 and opening 23a through which it passes en route to and through an opening 23b of the opposite side wall and which is of complemental contour to that of key 28; the contour arrangement of keys 26 and 28 and opening 23a and 23b is such that key 26 will not enter its opening when key 28 is in position to enter into and pass through opening 23b. The pin must be rotated angularly after key 28 has passed through its opening to permit key 28 to enter its opening 23b. Hence, while the contours of the keys and their openings are complemental individually and the arrangement of the contours of the pair of keys and of the pair of openings may be similar, such similarity is present with but one of the two pairs, the other of the pairs being dissimilar

as to arrangement. In the drawing, the keys have the similar arrangement with the direction of length of the openings extending at relative right angles; a reversal of this arrangement will produce similar results.

The length of the stem of pin 25 is such that the side walls 23 are in their normal positions when key 26 is seated in its opening 23*a*, the opposite side wall then being positioned in groove 27. This condition cannot be produced when assembling the structure excepting by first flexing the side walls inwardly to permit key 28 to pass through opening 23*b*, after which the pin is rotated angularly—with the flexing maintained—until key 26 alines with opening 23*a* whereupon release of the flexure permits key 26 to enter its opening; the pin rotation serves to shift key 28 (then outside of its side wall) into non-alining relation to opening 23*b*, thus locking the pin in position. To remove the pin, the side walls are first flexed to unseat key 26, after which the pin is rotated angularly to aline key 28 and slot 23*b* (thus preventing re-seating of key 26), after which release of the flexure permits the pin to be withdrawn.

29 designates a butt end section, preferably of circular contour, and secured to the body portion at the end of the latter opposite the location of side walls 23. One end zone of section 29 is of reduced cross-section to form a circular face about which such body portion end is mounted; to secure the body portion in position thereon, the zone face is provided with a recess to receive tabs 22 and an annular recess to receive the annular ridge section 22*a*, when the tabs 22 are bent and secured with a tight fit; this serves to lock the body portion and section together.

At an intermediate point in the length of section 29, the latter is provided with a diametrically-extending bore 31 open at one end and closed at the other end, the dimensions of the bore being such as to freely receive a spring 32 and a pair of balls 33 presently referred to. In addition, the opposite end zone of section 29 is provided with an annular groove 34 adapted to receive one or more balls 35 for a purpose presently referred to.

36 is a tubular member which surrounds the periphery of the butt end section 29 and has a length sufficient to substantially reach to the beginning of the side walls 23, the length being sufficient to permit the member to overlie both bore 31 and the annular groove 34 of the butt end section. This end of the member is provided with one or more openings 37 positioned in the end zone of the member, said opening or openings being designed to form seats for the ball or balls 35, the relative locations being such that when the member is in position, it will be practically held by the seated ball or balls 35 against endwise or longitudinal movement, but permitting free rotative movement of the member relative to the connected body portion and the butt end section.

The member is also provided with a series of spaced openings 38, alined, as to position, with the bore 31, said openings 38 being designed to form individual seats for a ball 33, when rotation of the member brings the opening into alinement with the bore; in addition the member has a single similar opening 38*a* opposite the series. The member also has an elongated slot 39 opening inward from the opposite end of the member and extending to the vicinity of an end of the butt end section; the slot is preferably positioned approximately symmetrical to the series of openings 38, and is designed to permit the exposure of a selected key as presently explained.

The assembly is completed by a cap element 40 which is designed to overlie and conceal the outer end of the butt end section and to overlie and be secured to the end zone of member 36 including openings 37 and 38, the element being preferably knurled peripherally and having a thin-walled zone to produce a semi-skirt appearance overlying the openings 38. In practice, the cap element 40 and member 36 have dimensions such as to set up the relationship of a drive fit or other locking method between them, with the result that the member 36 operatively forms a skirt for the cap element 40, the two rotating together with openings 37, 38 and 38*a* concealed.

In the commercial marketing of the container thus assembled, the manufacturer includes a number of washers, indicated at 41, these being carried by a pin 25 and designed to take the place of missing keys. The purchaser removes a washer for each key that he locates within the container. In some instances, the washers may be interposed with additional thin washers 41*a* designed to be retained in service to keep the keys out of contact with each other and permit greater freedom in the swinging movement of a key; in addition, the thin washers will tend to preserve the positions of the keys lengthwise of the container and thus aid in the selectivity of keys now referred to in detail.

The cap 40 and its skirt 36 is positioned with the slot 39 away from a position overlying the open top of the body portion; this position is secured by rotating the cap until ball 33 engages its seat in opening 38*a*, spring 32 retaining the ball in this position sufficient to retain the condition while the container is being carried in the pocket. The user is presumed to know the specific arrangement of the contained keys so that he will know which key is to be exposed for a particular service. When the user desires to expose a desired key, the cap 40 is rotated, thus bringing the series of openings 38 to the position of ball 33, the latter yielding when the ball is in unseated position. Since the seating in an opening tends to produce a click sound, it is possible to locate the skirt slot 39 over any particular key by noting the number of clicks as the series of openings 38 are successively moved over the position of ball 33. For instance, if the third key is desired, the third click will properly position the slot relative to the desired key, an action which completely uncovers the bit zone of the key. Hence, the container is then inverted to cause the selected key to swing on pin 25 and out of the body portion for use. After use, the key is swung back to its housing position and the cap rotated to render opening 38*a* active with ball 33. The double ball arrangement at 33 is a counter-part of 33 and functions as a friction reducer. The introduction of the lower ball serves as a bearing which allows the upper ball to turn freely.

As is apparent, the particular arrangement provides a number of advantages. The cap is held from longitudinal movement by the concealed groove 34 and balls 35, thus preventing tampering with the butt end zone of the container, while complete freedom of positioning and removal of keys is possible through the described regimen which includes the flexing of side walls 23 and rotation of pin 25; since both

actions are required in the regimen, any accidental flexing action when the container is in the pocket should not release the secured condition, since the pin must be rotated in addition to the flexing. The structure is formed in such manner as to facilitate its construction as compared with the earlier form shown in the patent above identified, thus materially reducing the cost of the assembly. The specific arrangement which provides the audible click condition, renders the assembly usable with greater facility and assurance as to key selectivity.

The preferred type of assembly differs from the above through the addition of physical partitions between the keys so that each key is mounted within its individual compartment. This assures greater accuracy in key selectivity, through the assurance that the key will always be in accurate alinement with the positioned slot **39**. With the above described form it would be possible for keys to slightly cant and thus require container manipulation to restore the desired key to its alined position. The washers **41***a* will tend to prevent such canting, but since the bit zone of the keys is not actually partitioned, slight canting would be possible, requiring the container manipulation referred to if canting be present. With the preferred type, complete partitioning is present, and since openings **38** are positioned to accurately place slot **39** relative to the partitioning in the bit zone, assurance is had that proper alinement between the selected key and slot **39** will be present whenever the cap is rotated to bring the proper opening **38** into alinement with ball **33**.

Two forms of partitions **42** and **46** are disclosed, but both forms present the partition as of thin sheet material, preferably metal, these approximating the shape of a key blank but having a length such as to permit securing of one end zone to the butt end section; because of such secured relation, certain changes are also required in the butt end section. The opposite end of the partition **46** is apertured at **46***c* and is carried by pin **25**. Since the partitions **42** and **46** are not integral with the body portion—as in the patented form—the partition end zones which co-operate with the pin **25** are held spaced by the presence of the keys; because of this, it is preferred to include washers **41** to provide this spacing in the absence of keys, the washer being removed when the key is being positioned; washers **41***a* would not be needed, since these are replaced by the partitions.

In section **44**, the portion of the section which underlies tabs **22** is formed with a plurality of parallel kerfs **45** extending vertically downward from the upper periphery a distance sufficient to receive the perforated ends of the partitions. The side walls of the kerfs are correspondingly perforated so that when the partitions are in position pin **43** can be inserted, thus mounting the partitions to the section **44** so that the partitions will have a slight movement along the pin **43**. In practice, such assembly is made prior to the mounting of the butt end section within the body portion **20**, the ends of tabs **22** then being bent down into and secured within the adjacent recess.

In the form shown in Figure 13, the butt end zone of the partition **46** is provided with a kerf **46***a* extending inwardly from the lower side edge thus producing a tongue **46***b* at such end of the partition. This requires a change in the butt

end section to meet this change in partition form. As indicated in Figure 13, this end zone of section **47** is formed with an undercut zone **47***a* the lower portion of which is closed by a vertical wall **47***b* which, in practice extends into kerf **46***a* by simply passing the tongue **46***b* into the space behind wall **47***b*. In assembling this form the partitions are first secured to the body portion by pin **25**, after which the opposite ends of the partitions are assembled to the butt end section **47** through slots **45***a* (at which time the tongue can be readily passed to position) and the body portion then secured to section **47** with the tabs **22** extending into the recess in the wall of the undercut. The remainder of the butt end section **47** is similar to that of section **29**.

As is apparent, either of the butt end sections **44** and **47** may be used for that shown as section **29**, by simply omitting the partitions from the forms shown in Figures 11 and 13, since the key bit does not enter into the butt end section.

The advantage of the preferred type comes through the presence of the partitions which produce the individual key-receiving spaces, thus restricting the zone within which the key is located and thereby assures that the bit end of the key will be within the range of the positioned slot **39**, thus assuring accurate selectivity—especially with the Figure 11 form, in which the partitions are substantially spaced (the butt ends of the keys or the washer substitutes practically spaces this end of the partition). As a result, complete assurance is had that positioning of the cap permits free movement of the selected key. The advantage is particularly apparent where the container does not contain the full equipment of keys.

As is apparent, both types of assemblages are such that the production of the container is greatly simplified and rendered less costly as compared with the patented form. It is lighter, more compact, and accommodates a greater variety of keys. In addition, the key positioning and removal is simplified with assurance had that the positioned keys cannot be displaced accidentally, any change in this respect requiring intentional action. The keys are so housed as to avoid any possibility of exposure of the bit end other than intentionally, thus avoiding damaging of the user's pocket in which the container is carried. When the container is assembled the structure of the butt end zone is rendered permanent, since the securing means for this zone is concealed and therefore incapable of being accidentally affected. The audible click simplifies the use of the container since the user is not required to inspect the structure to assure proper selection of a key; the container can thus be used under conditions of darkness. These are definite advantages to be found in the use of the invention.

While I have herein shown and described the invention and several ways in which it may be provided, it will be understood that changes and/or modifications therein may be found desirable or essential in meeting the exigencies of service use and/or the individual desires of a user. I therefore reserve the right to make any and all such changes and/or modifications so found desirable or essential, insofar as the same may fall within the spirit and scope of the invention as expressed in the accompanying claims, when broadly construed.

What is claimed as new is:

1. A key container comprising a body, said body including a tubular portion having an open top, and said body including a pair of parallel and spaced planar side members integrally formed with the tubular portion, a pin mounted in said planar members and extending therebetween, a cap rotatably mounted on said body, said cap including a skirt, said skirt having a slot extending longitudinally therein, said slot being of a width to permit only one key at a time to move edgewise therethrough, said skirt overlying the tubular portion of the body, said skirt having a plurality of spaced openings therein, and a spring pressed ball mounted in the body, and adapted to enter said openings in the skirt to selectively hold said skirt in a predetermined position, said body at the cap end having an annular groove therein, and said skirt having another opening, and a ball partially in said groove, and said last named opening carried by the skirt member, whereby longitudinal movement of the cap relative to the body is prevented.

2. A key container comprising a body, said body including a tubular portion having an open top, and said body including a pair of parallel and spaced planar side members integrally formed with the tubular portion, a pin mounted in said planar members and extending therebetween, a plurality of partitions extending lengthwise from said tubular portion, means loosely attaching one end of each of said partitions to said body, the other end of each of said partitions being supported by said pin, said partitions being movable laterally of the body on said pin, a cap rotatably mounted on said body, said cap including a skirt, said skirt having a slot extending longitudinally therein, said slot being of a width to permit only one key at a time to move edgewise therethrough, said skirt overlying the tubular portion of the body, said skirt having a plurality of spaced openings therein, and a spring pressed ball mounted in the body and adapted to enter said openings in the skirt to selectively hold said skirt in a predetermined position.

3. A key container comprising a body, said body including a tubular portion having an open top, and said body including a pair of parallel and spaced planar side members integrally formed with the tubular portion, a pin mounted in said planar members and extending therebetween, a plurality of partitions extending lengthwise from said tubular body portion, means loosely attaching one end of each of said partitions to said body, the other end of each of said partitions being supported by said pin, said partitions being movable laterally of the body on said pin, a cap rotatably mounted on said body, said cap including a skirt, said skirt having a slot extending longitudinally therein, said slot being of a width to permit only one key at a time to move edgewise therethrough, said skirt overlying the tubular portion of the body, said skirt having a plurality of spaced openings therein, and a spring pressed ball mounted in the body and adapted to enter said openings in the skirt to selectively hold said skirt in a predetermined position, said body at the cap end having an annular groove therein, and said skirt having another opening, and a ball partially in said groove and said last named opening carried by the skirt member, whereby longitudinal movement of the cap relative to the body is prevented.

4. A key container comprising a body, said body including a tubular portion having an open top, and said body including a pair of parallel and spaced planar side members integrally formed with the tubular portion, a pin mounted in both of said planar members and extending therebetween, a plurality of partitions extending lengthwise from said tubular portion, said partitions each having an aperture therein through which the pin extends, said apertures loosely fitting the pin to permit sliding movement of the partitions on the pin after the parts are assembled, a second pin in the body extending transversely through all of the partitions and said partitions having a limited slidable movement along the last named pin when in final assembled position to permit keys of various thicknesses to be mounted between said partitions.

OLIVER SEELY.

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