Oct. 14, 1958 M. BRUNNER 2,855,774

KEY CASE

Filed May 4, 1953

Fig. 1

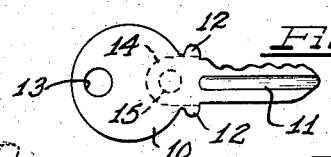


Fig. 2

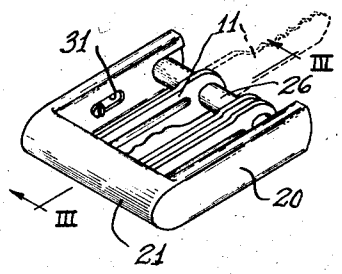


Fig. 3

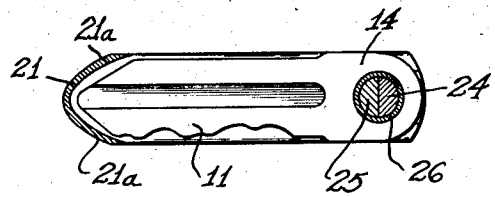


Fig. 8

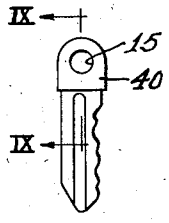


Fig. 5

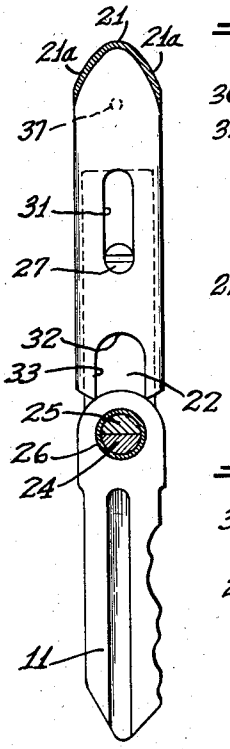


Fig. 10

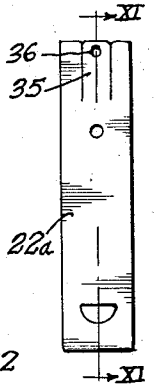


Fig. 4

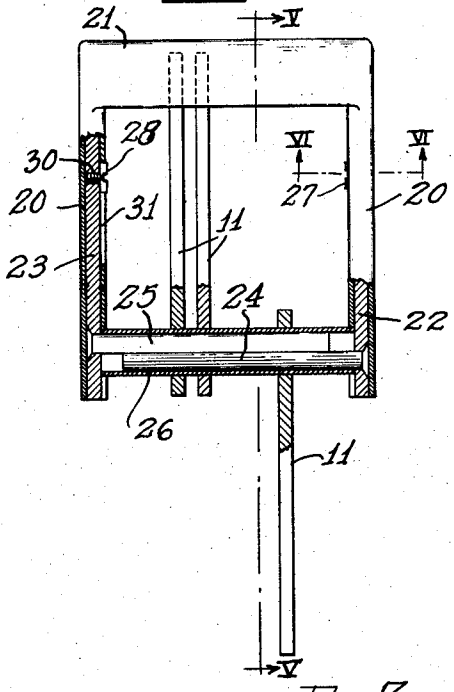


Fig. 9

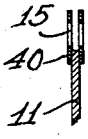


Fig. 6

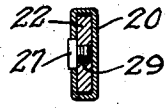


Fig. 11

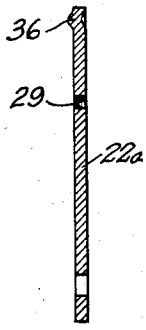
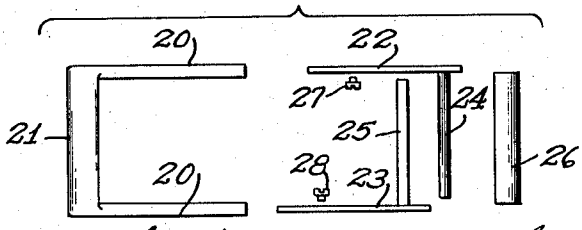


Fig. 7



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KEY CASE

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Application May 4, 1953, Serial No. 352,752

5 Claims. (Cl. 70—456)

This invention relates to key cases and, more particularly, it is concerned with the provision of an extremely compact key case which provides a maximum in key carrying capacity with a minimum in key case bulk.

Since the development of locks, in early days, the greatest difficulty attendant to their use has been the carrying of keys to open them. While the problem is a minor one when only one or two locks are involved, nevertheless the problem is generally recognized as a severe one when a large number of keys must be carried by the individual. With modern day living, and with a great increase in the possessions of individuals, such as for example, automobiles, garages, and better homes, the number of keys necessary for the average individual has greatly increased over that of years ago.

A common key case now available, comprises a very large, bulky apparatus with a plurality of loops upon which individual keys may be placed for independent use. This type of key case is extremely unwieldy. Other alternatives have been to provide chains which are hooked to the belt and which permit the keys to lie loose in the pocket, and key rings which likewise permit the keys to be loose in the pocket. These latter two devices are very undesirable since keys in the loose state tend to wear out the trouser pockets rapidly. Further the tendency of the keys to move loosely about on the key ring causes the keys to take up unnecessarily large space in the pocket.

The present invention contemplates the provision of a key case which will actually take up less space than the ordinary pack of book safety matches while at the same time providing space for as many as ten or twelve keys. In accomplishing this, applicant proposes the construction of a novel key which provides the standard lock-operating key area but which has a reduced head portion. In combination with this novel, practically headless, key, a key case is provided which will carry the keys in a retracted or in an extending position and which will combine with the key to provide a key-operating handle to replace the above mentioned eliminated key head.

It is therefore, an object of the present invention to provide a novel compact key case.

Still another object of the present invention is to provide an extremely compact key case which provides a maximum in key carrying capacity and yet utilizes a minimum of space.

A further object of the present invention is the provision of a combined key and key case combination in which the key case provides the operating handle for turning the key, rather than the usual head on the key.

Still a further object of the present invention is the provision of a key case which will in its retracted position provide space for a plurality of keys, and which will partially separate to permit the utilization of any

one of the above mentioned keys while at the same time retaining the unused keys in a stored, out-of-the-way, position.

A feature of the present invention is the utilization of a U-shaped frame having legs approximately the same size as the keys to be carried thereby.

Another feature of the invention is the provision of a key case in which the keys are rigidly secured in a compact stored condition when not in use.

Still other and further objects of the present invention will immediately become apparent to those skilled in the art from a consideration of the following detailed description and attached drawing in which several modifications of my invention are shown and described by way of illustration only.

On the drawings:

Figure 1 is a plan view of a key;

Figure 2 is an isometric view showing the novel key case of the present invention with the keys mounted in position therein;

Figure 3 is an enlarged cross-section, taken along the line III—III of Figure 2, and showing the keys in a stored condition;

Figure 4 is an enlarged plan view, in partial cross section, of the key case of the present invention showing its use when one key is being utilized and the remaining keys are stored;

Figure 5 is a cross sectional view taken along the line V—V of Figure 4 and showing the parts in a position in which the key case is open to permit the manipulation of the keys therein into an operative position;

Figure 6 is a view in cross section taken along the line VI—VI of Figure 4 and showing the construction of the side rail retaining means utilized therewith;

Figure 7 is an exploded view of the novel key case constructed according to the invention and showing the various parts in an unassembled position;

Figure 8 is a modified form of a key for use with the present key case;

Figure 9 is a cross section view taken along the line IX—IX of Figure 8 and emphasizing the construction of the key head;

Figure 10 is a modified form of side rail for utilization with the key case of the present invention; and

Figure 11 is a cross sectional view of the modified side rail as taken along the line XI—XI of Figure 10.

As shown on the drawings:

The usual household door key utilized in such locks as the well known Yale tumbler type of lock is approximately 1 1/16 inches from the tip of the key to the end of the lock operating portion which is indicated by an abutment stop. Such a key is shown in Figure 1 wherein the usual large key head **10** is shown connected to a lock operating shank **11**. Since the axial position of the key within the lock is critical in most locks, abutment stops **12** are almost universally provided to prevent over-insertion of the key into the lock. Aperture **13** is provided in the head **10** to permit the attachment of the key to the usual key ring or prior art key case.

As explained above, this type of key provides many disadvantages and one of the purposes of the present invention is to improve its construction to eliminate the above mentioned undesirable features. This is accomplished by removing the entire head portion except that of the area within the dotted lines **14** and by drilling an aperture indicated by the dotted lines **15**. While this may, of course, be accomplished by reworking a key constructed according to the solid outline of Figure 10,

it is preferred that the key be originally proportioned in the smaller dimensions for use with the key case which will now be explained.

As shown in Figures 2 and 7, which show the key case of the present invention in substantially actual size, the case is constructed of a relatively few simple parts, forming a generally rectangular outline.

The housing proper is formed in the shape of a U having legs **20** and a bight portion **21**. The legs **20** are hollow and provide longitudinal channels in which the side rails **22** and **23** are slidably mounted. Fixedly secured to the side rails **22** and **23** are transversely extending support members **24** and **25** which are, in the preferred embodiment, semi-circular in cross section so that when positioned immediately adjacent each other they will present a cylindrical outer surface upon which the hollow key support cylinder **26** is positioned. Assembly screws at **27** and **28** are provided and are threaded into apertures **29** and **30** in the respective side rails **22** and **23**.

As may clearly be seen from a consideration of Figures 2, 4 and 5, stop screws **27** and **28** are secured to the side rails **22** and **23**. When assembled as shown in Figures 2, 4 and 5, the side rails **22** and **23** are permitted to move within the limits set by the ends of the elongated slots **31** and the cooperating stop screws **27** and **28**. In the innermost, or retracted position of the case, the cylinder **26** also acts as a stop by cooperating with end **32** of the open ended slot **33** formed in the legs **20** of the U-shaped housing.

In constructing the U-shaped housing, the legs **20** are preferably formed of flattened tubing, the inside of which is maintained in a substantially rectangular shape by means of an internal form during the flattening process. However, it of course will be realized that the use of flattened tubing in which a somewhat non-rectangular internal cross section is provided may be suitable if the side rails **22** and **23** are likewise of a cooperating, non-rectangular cross section.

The flattened tubing is connected by the bight portion **21** which, as is clearly shown in Figures 3, 5, and 7, is of a generally U-shaped cross section having over-hanging lip portions **21***a*. The bight **21** is secured, preferably by welding, silver soldering, or similar permanent fastening method to the ends of the channels **20**. In view of the fact that the bight **21** is provided with the over-hanging portions **21***a*, and since the weld or solder joint extends completely around the cross section of the bight, it will be clear that a very rigid structure is provided, in which the side channels **20** are maintained rigidly relative to the bight member **21** without the means of bracing at the ends removed from the bight. This is an important feature, and the rigidity thus afforded aids in the retention of the parts in their retracted or extended position as will be more fully explained below.

In operation, the various parts are assembled as above explained and as shown in Figure 4. In the assembly, the keys **11** are placed, by means of their apertures **15**, upon the cylinder **26**. This is done prior to insertion of the supports **24** and **25** within the tube or cylinder **26**. After the assembly of the keys on the cylinder and the insertion of the members **24** and **25** therein, the slides **22** and **23** are inserted within the tubular channels **20** and the stop bolts at **27** and **28** are inserted into position within the slots **31**.

With the parts thus assembled, it will be seen that the cylinder **26** may be moved transversely of its longitudinal axis merely by pulling it toward and away from the bight **21**. With the cylinder **26** in its retracted position in which it abuts the edge **32** of the slot **33** and in which it is the closest to the bight **21**, the keys **11** which are intended for storage will be prevented from rotation around the cylinder, in the manner shown in Figures 3 and 4 wherein the overhanging lip portions **21***a* positively prevent the keys **11** from becoming disassociated with the bight portion. In this position it is possible to have all of the keys in storage and in such a situation the maximum dimensions of the key case, including all of the keys, would thus be equal to a generally rectangular box having a height equal to the depth of the side channels **20**, a length equal to the length of the side channels **20**, and a width equal to the length of the bight **21**. As explained above, this is in actual practice less than the usual small folder of paper matches now so commonly found on the market and which is rather universally carried by persons who desire a compact supply of matches.

From this position of retraction, which is shown in solid lines of Figure 2 and Figure 3, the cylinder **26** may be pulled laterally away from the bight **21** into a position shown in Figure 5. In this position all of the keys **11** may readily be pivoted around the cylinder **26**. In general use however, only that key which is to be utilized is pivoted out of alignment with the bight **21**. It is swung out from under the overhanging lips **21***a* and then the cylinder **26** is pushed inwardly again toward the bight portion **21** until it is positioned in its retracted position as above mentioned and shown in Figures 2, 3 and 4. In this position of the parts, one of the keys is pivotable about the cylinder **26** while the remaining keys are held in stored position and their tips held by the overhanging lips **21***a* of the bight portion **21**. This condition is shown in Figure 4 and is also shown in the isometric view of Figure 2 in dotted lines.

It has been found in practice that by constructing the U-shaped housing with its legs **20** slightly divergent from each other, tension is provided which will maintain the parts in either the retracted or extended positions as above discussed during all normal use. It is therefore contemplated that the key case of the present invention be utilized without any particular detents for maintaining the parts in their respective contracted and extended positions. It is of course realized that in some instances, where a slightly greater expense is not considered undesirable, detent means could be provided. Such a detent may be constructed according to the showings of Figures 10 and 11. In these figures, the side rail **22** is shown to be modified somewhat. While only side rail **22** is herein shown, it is of course obvious that both side rails **22** and **23** could be so modified.

As may be seen from Figures 10 and 11, the side rail **22***a* may be constructed of a spring material such as spring steel, spring brass, beryllium, or any other relatively tough material which has natural resiliency. At the upper end of the side rail **22***a*, a finger is pierced and dimpled. This finger, indicated at **35** has a laterally extending dimple portion **36**. From a consideration of Figure 5 it will be recognized that the side rail **22**, or **22***a* moves a distance determined by the stop **27**, and that in the extended position, the upper end of the side rail **22**, comes approximately laterally adjacent the upper end of the slot **31**. Thus, by utilizing a side rail **22***a* having a dimple **36** in place of rail **22** the parts may be maintained in extended position by the movement of the dimple **36** slightly into the slot **31** upon the parts reaching the extended position. Due to the spring nature of the finger **35**, the dimple may easily be forced laterally out of the slot **31** by pushing the cylinder **26** toward the bight **21**.

In order to retain the cylinder **26** in its retracted position, a small hole, indicated at **37**, shown in dotted lines in Figure 5 may be provided. This hole will cooperate with the dimple **36** permitting it to move laterally into the hole when the cylinder **26** is in its retracted position shown in Figures 2, 3 and 4. Again, the resiliency of the finger **35** will permit the dimple **36** to spring out of the hole **37** when the cylinder **26** is pulled laterally away from the bight portion **21**.

By the use of this simple detent arrangement, it is clear that the parts will retain themselves in the retracted or extended position without difficulty, even under the severest usage. It is of course contemplated that other

kinds of detents could be utilized, and the detent structure herein shown is intended merely as an illustration of one of the simpler forms of construction which can readily be utilized.

While, as explained above, keys for use in combination with the novel key case of the present invention may be made with small heads originally at the key factory, it will often occur that persons will desire to have the keys which they already own utilized with the present key case. Since the grooves found in the usual household keys extend beyond the stop portions **12** of the key, it is sometimes found difficult to drill a hole **15** in its desired spot. Further, these grooves interfere with the free pivotal movement of the keys on the cylinder **26**, especially when a full complement of keys is positioned on the cylinder. Therefore, it is contemplated that a modified form of the key be utilized in such instances.

As shown in Figures 8 and 9, a cap **40** is provided. This cap is constructed of rectangular tubing having an internal channel which is substantially equal to the external dimensions of the usual key blade or shank. The key may then be cut off slightly in back of the stops **12**, and the head **40** may be slid over the extension of the key shank and soldered or otherwise permanently bonded thereto. In view of the smooth external surface presented by the sides of the head **40**, no catching or interference is possible between keys and it has been found that keys placed upon the cylinder **26** and having this type of head construction pivot very easily and provide a very desirable action.

In the event a key with a cap **40** is used apart from the case of Fig. 2, a coin can be inserted in the slot of the cap to act as a head for rotating the key in a lock.

A consideration of the keys utilized with the present key case will of course immediately reveal that with the elimination of the large head portion **10** of the ordinary key, the operating portion generally actuated by the fingers is also eliminated. This is a difficulty which is also overcome by utilization of the key with the key case of the present invention. It will be immediately clear from a consideration of Figures 2 and 4, that the rigid structure of the housing and cylinder **26** when assembled and in retracted position will provide the necessary handle for rotating the key. In fact, since the frame of the key case is somewhat larger than the area of the ordinary key head, the key case provides an improved operating means for rotating the key which is actually stronger and more satisfactory than the enlarged key heads found on the ordinary key of today.

It will thus be seen that I have provided a key case which will provide an absolute maximum of key carrying capacity with an absolute minimum of key case space. This is clearly true since the cross section area as shown in Figure 3, of the key case in its contracted or storing condition is substantially the same as the key itself. Since there is no waste space at the sides of the stored keys, between the outside keys and the side channels **20**, it is clear that the key case of the present invention provides the ultimate in storage efficiency. Further, by the combination with this key case of a simplified key utilizing no enlarged head portion, it is possible to provide an extremely small outer dimension which will not be a nuisance in the trouser pocket.

Modifications may, of course, be made to the present invention without departing from the spirit of the invention and it is therefore not intended that the invention be limited except as required by the appended claims.

I claim as my invention:

1. A key case, said key case comprising a U-shaped housing having a pair of legs connected at one end by a concave bight portion and providing a pair of channels, and a key carrying assembly slidably mounted in said channels, said assembly having a pair of longitudinal side rails reciprocable in said channels, support means extending between said side rails and fixedly secured to at least one of said side rails whereby keys may be pivotally mounted on said support means for positioning in a stored or operating condition in which said support means and side rails are reciprocated to an extreme position toward said bight in which keys carried by said key case assembly extend into said concave bight portion or in a key changing position in which the support is reciprocated to an extreme position away from said bight, and co-operating restraining means on the legs and said key carrying assembly operative to hold said key carrying assembly in its extreme positions relative to said bight portion upon movement of the key carrying assembly to such extreme positions.

2. A key case comprising a generally rectangular frame having a pair of oppositely disposed telescopic sides, a third side having a cavity extending therealong in the face thereof which lies in the inside of the rectangle and having a width substantially equal to that of the operating portions of the keys to be used in said key case, and a fourth side having support means for pivotally securing a key, said fourth side being slidable toward and away from said third side by telescoping said pair of sides to thereby permit the key to be stored within said rectangle with its lock operating end in said cavity or pivoted around said fourth side for use, and cooperating restraining means associated with said pair of oppositely disposed telescopic sides to hold said fourth side in its extreme telescopic positions relative to said third side after movement into such respective positions.

3. A key case, said key case comprising a U-shaped housing having a pair of legs connected at one end by a concave bight portion and providing a pair of channels, and a key carrying assembly slidably mounted in said channels, said assembly having a pair of longitudinal side rails reciprocable in said channels, support means extending between said side rails and fixedly secured to at least one of said side rails whereby keys may be pivotally mounted on said support means for positioning in a stored or operating condition in which said support means and side rails are reciprocated to an extreme position toward said bight portion in which keys carried by said key case assembly extend into said concave bight portion or in a key changing position in which the support means is reciprocated to an extreme position away from said bight portion, said legs having an initial unstressed divergent position relative to the axes of the side rails thereby providing a resilient friction producing spring bias against said longitudinal side rails after deformation of the legs into assembled sliding position on the side rails.

4. A key case, said key case comprising a U-shaped housing having a pair of legs connected at one end by a concave bight portion and providing a pair of channels, and a key carrying assembly slidably mounted in said channels, said assembly having a pair of longitudinal side rails reciprocable in said channels, support means extending between said side rails whereby keys may be pivotally mounted on said support means for positioning in a stored or operating condition in which said support means and side rails are reciproctaed to an extreme position toward said bight portion in which keys carried by said support means extend into said concave bight portion or in a key changing position in which the support means is reciprocated to an extreme position away from said bight portion, at least one of said side rails having a detent thereon engageable with retaining means in a respective leg channel at both extremes of movement of said side rail.

5. A key case comprising a generally rectangular frame having a pair of oppositely disposed telescopic sides, a third side having a cavity extending therealong in the face thereof which lies in the inside of the rectangle, and having a width substantially equal to that of the operating portions of the keys to be used in said key case, and a fourth side having support means for pivotally securing a

key, said fourth side being slidable toward and away from said third side by telescoping said pair of sides to thereby permit the key to be stored within said rectangle with its lock operating end in said cavity or pivoted around said fourth side for use, and retaining means operative to maintain said fourth side in its extreme positions relative to said third side, said last named means comprising a detent mounted for movement with said fourth side and engageable with retaining means in at least one of said

first and second sides at both extremes of movement of said fourth side.

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