United States Patent [19]

Elder et al.

[11] **3,786,659**

[45] **Jan. 22, 1974**

[54] **LOCK KEY**

[75] Inventors: **George Elder**, Woodside; **Hans F. Lehnhoff**, Moraga, both of Calif.

[73] Assignee: **Schlage Lock Company**, San Francisco, Calif.

[22] Filed: **Nov. 15, 1972**

[21] Appl. No.: **306,695**

[52] **U.S. Cl.** **70/395**, 70/408

[51] **Int. Cl.** **E05b 19/04**

[58] **Field of Search** 70/395, 408, 393, 405, 406

[56] **References Cited**

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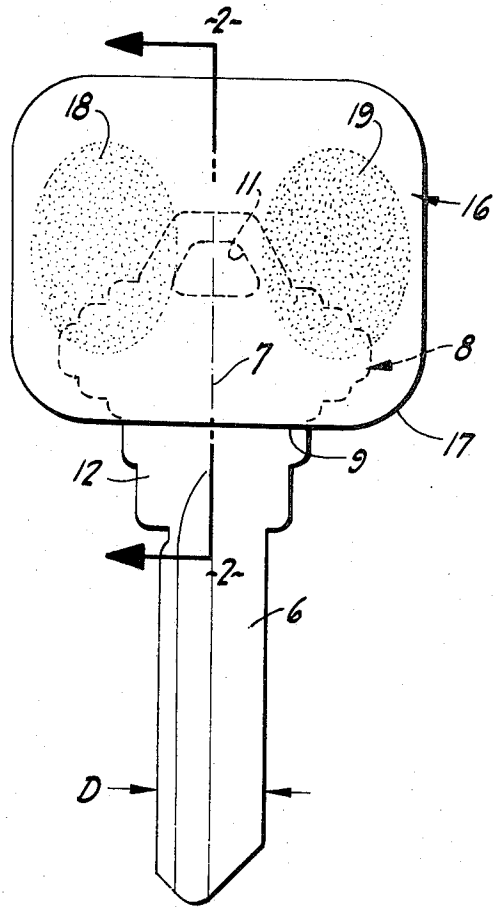
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Primary Examiner—Robert L. Wolfe

[57] **ABSTRACT**

A lock key having a shank elongated along an axis and having a predetermined width also has a substantially flat bow integral with the shank and extending laterally thereof for a much greater width to provide extensions on opposite sides of the shank axis. A hard, integral, non-frangible turning pad is preferably molded in intimate contact with the bow and extends out from the margins of the bow to encase the bow except at the junction of the bow with the shank. The pad furnishes spaced torque zones that are supported by the encased bow to resist yielding of the extended turning pad under torque.

5 Claims, 6 Drawing Figures



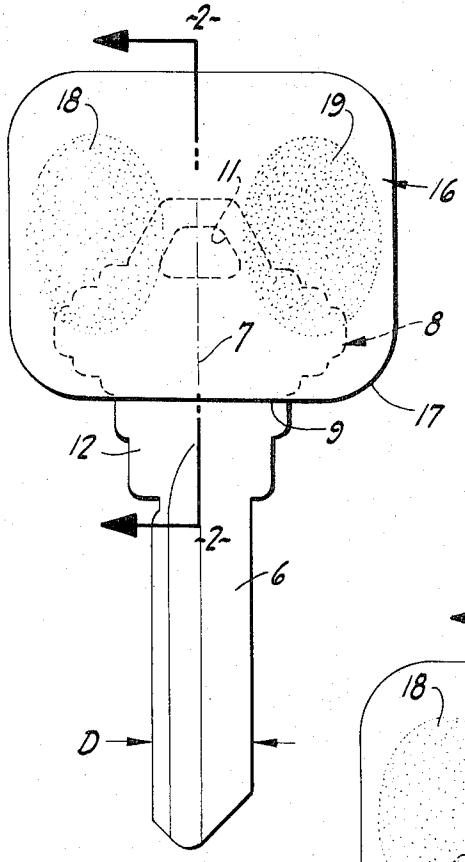


FIG. 1

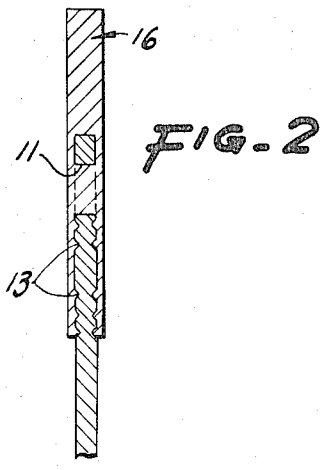


FIG. 2

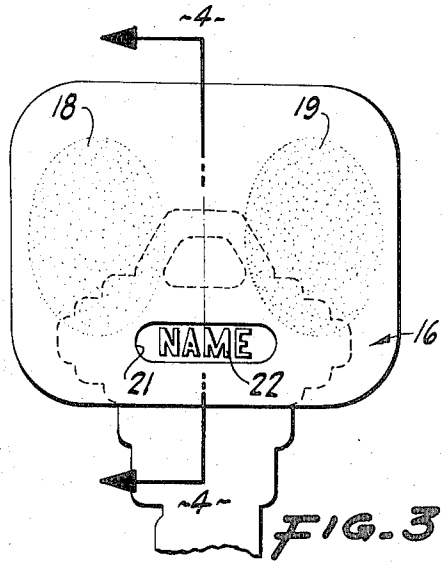


FIG. 3

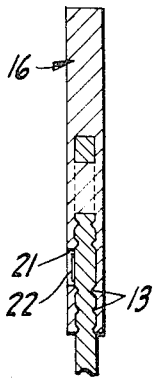


FIG. 4

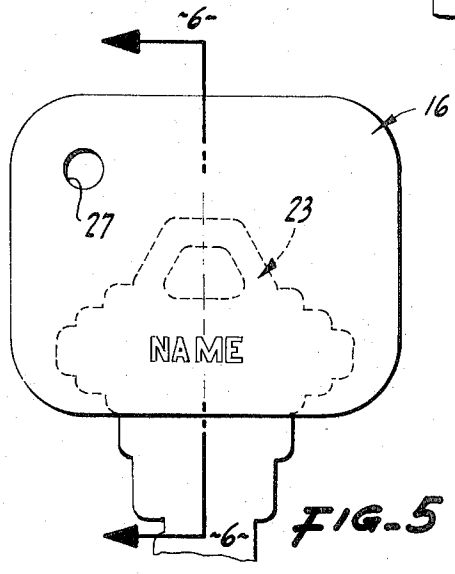


FIG. 5

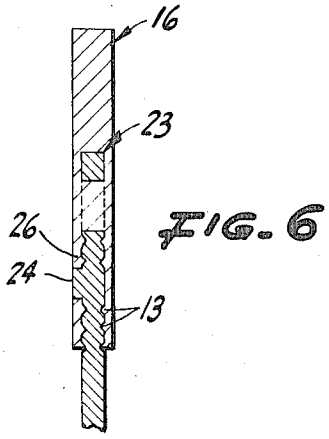


FIG. 6

LOCK KEY

The fabrication of keys for locks, particularly pin tumbler locks, has proceeded for a long time along fairly standardized paths. The usual key is formed of a metal blank with an elongated shank having an irregular cross-section in order to fit a particular lock and having edge serrations for the purpose, also, of fitting and moving the lock. The shank is usually integral with a somewhat wider bow. The bow often has a perforation to serve as a key ring hole or hook hanging hole. Frequently the bow carries indicia of various sorts, such as the name of the key maker as well as a serial number of the key and such as identifying indicia; for example, the name of a hotel to which the key is appurtenant or a room number or the like.

In recent years the security of many locks has been partially compromised by the wide spread distribution of the corresponding keys. A person surreptitiously obtaining such a key can immediately read the location of the lock to which the key belongs and so can gain access to the locked space. Instead, therefore, of following the older preference of having various identifying indicia appear on the key itself, especially on the key bow, the trend now is to omit such indicia from the key. Should the key come surreptitiously into the hands of an unauthorized person, there is no ready identification of the lock to which the key belongs. There are, however, many keys extant with such indicia already on them, perhaps embossed or incised in the key bow metal. There are many lock and key manufacturers extensively equipped to manufacture keys of the present sort who would find great expense and difficulty in changing the preset key style.

It is therefore an object of our invention to provide a lock key which can generally be manufactured on present equipment and can readily be handled by the existing set-ups of most locksmiths yet which will prevent the ready identification of the lock associated with the key.

Another object of the invention is to provide a lock key which can readily be utilized in newer, high security locks requiring substantially increased torque for their operation yet which will not fail under such use.

A further object of the invention is to provide a lock key of somewhat distinctive configuration and dimension in order that, while principally following normal key techniques, it can be easily distinguished from customary keys.

An additional object of the invention is to provide a key which can be manufactured either as a key having indicia easily visible thereon or as a key in which the indicia are concealed or not visible.

A further object of the invention is to provide a key which has improved, pleasant tactile and visual factors and which most people prefer over the standard key from the aspects of feel and appearance.

An additional object of the invention is to provide a key which tends to remain clean despite handling by many different people and which does not tend to accumulate grease, dust or other soil.

A still further object of the invention is to provide a key which in many respects is standard but as ordinarily handled is a non-conductor of static electricity.

A further object of the invention is in general to provide an improved key.

Other objects together with the foregoing are attained in the embodiments of the invention described in the accompanying description and illustrated in the accompanying drawings, in which:

FIG. 1 is a front elevation of a key constructed pursuant to the invention;

FIG. 2 is a cross-section, the plane of which is indicated by the line 2—2 of FIG. 1;

FIG. 3 is an elevation of a modified form of key pursuant to the invention;

FIG. 4 is a cross-section, the plane of which is indicated by the line 4—4 of FIG. 3;

FIG. 5 is a front elevation of a further modified form of key pursuant to the invention; and

FIG. 6 is a cross-section, the plane of which is indicated by the line 6—6 of FIG. 5.

In investigating the literature relating to the construction of lock keys, we have examined patents obtained from the United States Patent Office. The best references presently known to us are as follows:

U.S. Pat. Nos. 2,200,454, Rahn, May 14, 1940; 2,759,279, Schlage, Aug. 21, 1956; 2,759,280, Schlage, Aug. 21, 1956; 2,982,041, Kent, May 2, 1961; 3,427,833, Lempke, Feb. 18, 1969; 3,481,168, Unter, Dec. 2, 1969.

The Rahn and Schlage patents employ separate metallic or comparable members which are clamped over or mechanically fastened to a key either of a special shape or of a standard shape. The kent patent has a thin plastic envelope formed on and heat sealed around part of the bow of a key. The Lempke and Unter patents have plastic bows on straight, metallic key shanks. Without analyzing each of these patents in detail and while recognizing that each one is well suited for the particular purpose for which it was designed, we have nevertheless found that each of them has some shortcomings in meeting the particular present-day conditions that we desire to meet. These conditions include the considerably increased torque necessary to operate modern high security locks, the desirability of concealing indicia on the keys, the desirability of manufacturing the keys so that they can be produced and serviced on most current equipment and the desirability to keep them cleaner, and make them better in appearance, pleasanter to handle and to have various other improved attributes.

One form of key pursuant to our invention is constructed as shown in FIGS. 1 and 2. In this instance there is afforded a key shank 6 of standard configuration in cross-section and standard in present or potential bitting. The shank is elongated along a central axis 7 and has a predetermined width D with material disposed more or less symmetrically on either side of the axis. The key shank 6 can be made of any suitable substance but customarily is of a brass or nickel-silver composition. The key shank is made integrally with a key bow 8 usually of the same thickness as the original material of the shank. While a sharp line of demarkation between the bow and the shank is not usually defined, there can be a line 9 arbitrarily chosen as such line of demarkation. The bow 8 sometimes is provided with an opening 11 therethrough to serve as a hanging or ring hole. The external configuration of the bow 8 is preferably such that the bow extends to a substantial distance either side of the axis 7 when measured radially from the axis and so has a substantially greater width than the predetermined width D. In some in-

stances the width of the bow is two to three times the width of the shank.

Although not illustrated herein, it is usual and customary to provide on one or both of the faces of the bow and sometimes on intermediate portions **12** of the shank **6** various indicia such as the serial number of the key, the lock style or type, the name or trademark of the manufacturer, the number of room the room a building to which the key pertains, the name of the building itself, sometimes lost key return information such as the address of the building to which the key pertains and other, like information related to the associated lock.

The configuration or outline of the bow may be of any desired kind consistent with the provision of a substantial width and may contain indicia as in standard practice or may be devoid of such indicia. It is often the case that for manufacturing or for other reasons and despite the presence or absence of other indicia, the bow may be provided with a number of transverse grooves **13** or other irregularities not as deep as the opening **11.**

In any case, whether the key is virtually standard or is especially made in accordance with the characteristics mentioned, the key of our invention is particularly afforded a special turning pad **16.** This is conveniently an integral tablet preferably fabricated of a plastic material having a hard, dense, non-frangible, substantially inelastic, coherent material. The turning pad is disposed in intimate contact with the surface of the bow, as particularly shown in FIG. **2.** The two are in closely abutting, virtually adhesive contact with substantially no void or clearance between them. The key and the pad have substantially the same coefficient of thermal expansion.

The turning pad has an outline **17,** in this instance rectangular with curved corners and extends to either side of the axis **7** substantially more than the width of the original bow. Preferably, the pad extends to a transverse location on the bow at the line **9.** The pad is extended also in length and thickness beyond the normal bow. The entire bow is encased in the turning member and is extended in height (or length) and width and thickness by the turning member. The extent of the turning member is sufficient to establish a pair of widely spread and elongated torque zones **18** and **19** on the pad on opposite sides of the center line **7** or shank **6.** These zones are provided not only on the obverse face of the turning pad, but on the reverse side thereof as well. This is for the reason that a person exerting the additional torque now required to operate high security locks has additional area over which to distribute finger pressure and has more than the usual grip or purchase or leverage on the turning pad. The user also is protected from what sometimes are relatively sharp ridges or projections on the key bow, more noticeable when high turning effort must be used.

The material of the turning pad, being quite hard is readily given and retains a surface that is preferably planar and very smooth.

A convenient way of depositing the pad material in intimate contact with the bow is to mold the plastic material in the indicated position. Sufficient material is used so that any grooves such as **13** on the key bow and any openings such as **11,** as well as any raised or incised indicia are well covered by the pad material. There is, in effect, an interlock between the turning pad and the key bow.

Even when the key bow is initially smooth and plain, devoid of indicia and devoid of an opening, the turning pad material is so intimately associated therewith that a firm, permanent interengagement is afforded. This is particularly important since in some of the earlier devices separate layers are attached to the key bow. Some play or motion may then result and this becomes aggravated in time. The clearance spaces afford places for the retention of lint, dirt, grease and the like. The key bow portion may eventually become quite unsightly. In the present instance, the configuration and surface of the turning bow are smooth and hard so as to resist soil and grease, or the like. The new pad does not retain a static charge. Particles do not adhere. The pad material chosen is preferably repellent to such extraneous coatings. Furthermore, it is feasible to provide a turning pad of material that is of low conductivity thermally and electrically. The normal metal key bow conducts electricity and imparts a static shock to the user and may under variant temperatures feel either hot or clammy. With the turning pad, the bow is insulated and no electrical or thermal shocks are transmitted to the user.

The turning pad is likewise made of relatively stiff material. Some of the prior art key covers are limp or flexible for excellent reasons in their environments but the provision of yielding covers or bows in keys for building or dwelling locks of high security makes operation difficult and after a short period of use often results in a permanent curvature or set or cracking in the key bow. This is quite undesirable. In the present instance, the pad is made of relatively hard and stiff material. This may tend sometimes to be brittle. But since the torque zones **18** and **19** or pressure zones are disposed largely over the outer extremities of the metallic key bow, the turning pad is substantially supported and reinforced. The pad is not subjected to bending or yielding under torque and so is protected from cracks that might spoil it.

In addition, the provision of the turning pad as a later-added, but integral item permits the manufacture and handling of the metallic portion of the key by standard equipment and standard mechanism without change. It is possible in this way easily and without expenditure for substantial new equipment to make a key bow of any desired new size and shape and having substantial advantages. This is particularly true when the key turning pad is made of opaque material and is put on keys already having indicia thereon, since then the indicia are hidden and do not appear to the ordinary observer.

In a few instances there are indicia which it is desired to show. As particularly illustrated in FIGS. **3** and **4,** the arrangement is precisely as described in connection with FIGS. **1** and **2,** except that on one or perhaps both faces of the turning pad the bow area is not entirely opaque. There may be an open window **21,** as shown in FIG. **3.** Or, the window may be filled with a clear plastic material so that the surface is quite smooth and coplanar. In either case an indicium **22** such as a trademark on the key bow can easily be discerned.

Alternatively, as shown particularly in FIGS. **5** and **6,** the material of the key bow **23** can be provided in relief to afford a plateau **24** upstanding from the general plane of the key bow. This is surrounded by the material **26** of the turning pad. In this instance, it is easy to

stamp numbers or other characters, if desired, on the plateau **24** without affecting any other portion of the key bow. Alternatively, the plateau may have the shape of letters or other indicia.

In many instances the pad can be left imperforate, as shown in some of the figures, but if desired an opening **27**, as shown in FIG. **5**, can be provided, preferably in an area clear of the underlying metal key bow.

What is claimed is:

1. A lock key comprising a shank elongated along an axis and having a predetermined width measured radially from said axis; a substantially flat bow integral with and extending across one end of said shank to a width greater than said predetermined width to provide torque zones on opposite sides of said bow and on opposite sides of said axis; and a hard, non-frangible, integral turning pad in intimate contact with, extending beyond and encasing said bow except at the junction of said bow and said shank and overlying and supported by said torque zones against yielding under torque about said axis.

2. A device as in claim **1** in which said turning pad is substantially opaque.

3. A device as in claim **1** in which said bow is provided with depressions and said turning pad substantially fills said depressions.

4. A device as in claim **1** in which said bow is provided with projections and said turning pad surrounds said projections and leaves the ends thereof exposed.

5. A device as in claim **1** in which said shank and said bow are metal of a predetermined coefficient of expansion and said turning pad is plastic of similar coefficient of expansion.

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