

[54] **MULTIPLE PART KEY FOR
CONVENTIONAL LOCKS**

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[22] Filed: **Mar. 28, 1973**

[21] Appl. No.: **345,562**

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

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

[58] Field of Search **70/395, 408, 393, 411**

[56] **References Cited**

UNITED STATES PATENTS

2,653,492	9/1953	Abrams.....	70/400 X
3,313,135	4/1967	Reisner	70/408
3,349,589	10/1967	Fricke.....	70/395
3,729,965	5/1973	Gartner.....	70/395

Primary Examiner—Robert L. Wolfe

[57] **ABSTRACT**

A multiple part key includes an elongated extruded shank having a lock end portion for insertion into a conventional lock and an opposite end portion with indents for reception in a hilt portion. The hilt portion is formed of two parts which are movable relative to each other so that the shank, when assembled with the hilt portion, is locked in by movement relative to the hilt portion and with the two hilt parts movable relative to each other for the final locking procedure.

As a further adjunct to this structure, a tamper proof cover for the key shank is provided with locking means which when tampered with will show, thus indicating a possible tampering with the key itself.

11 Claims, 7 Drawing Figures

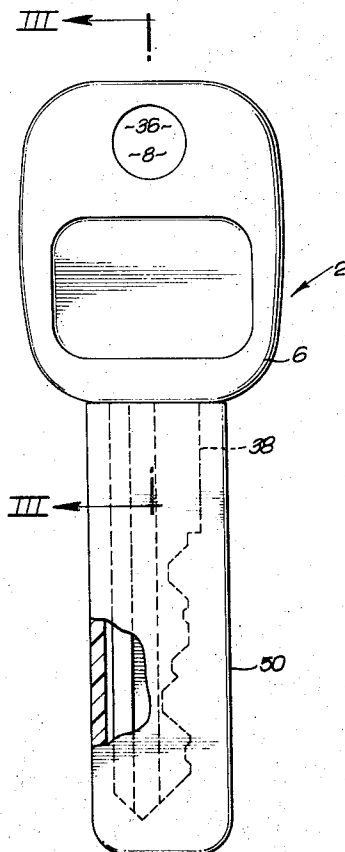


FIG. 1.

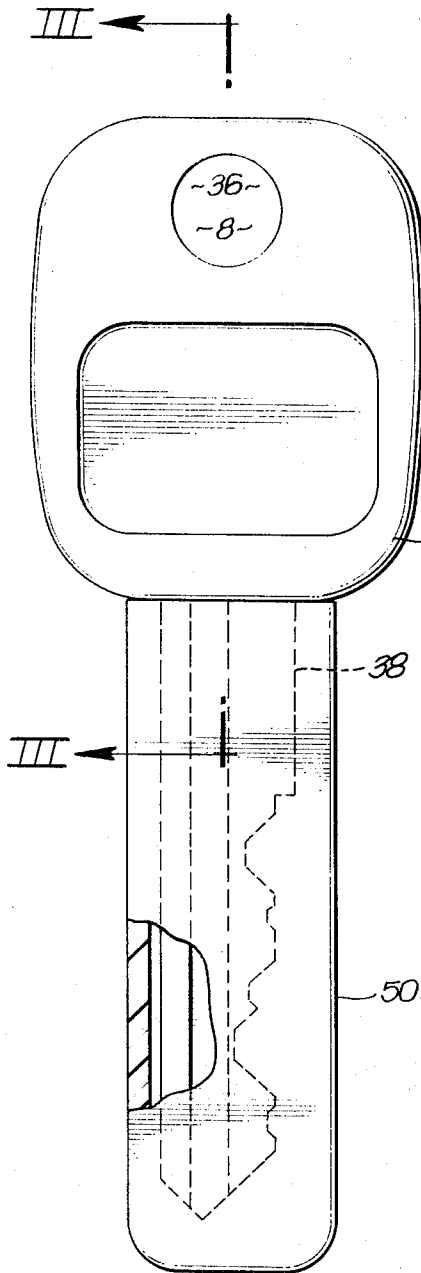


FIG. 2.

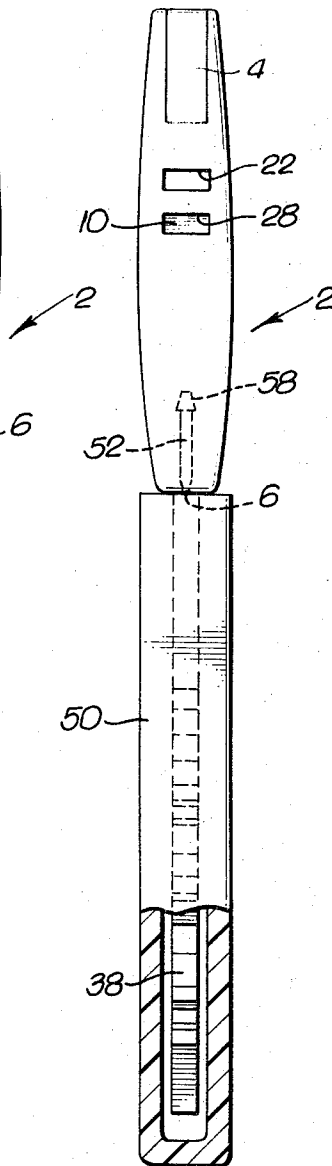


FIG. 3.

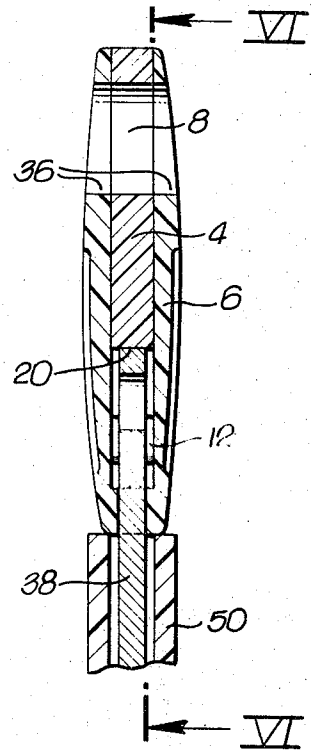


FIG. 4.

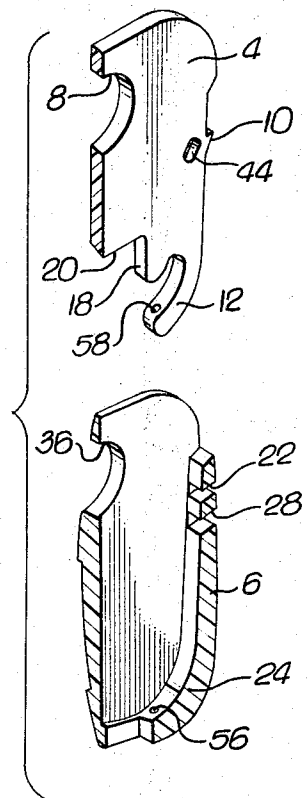


FIG. 5.

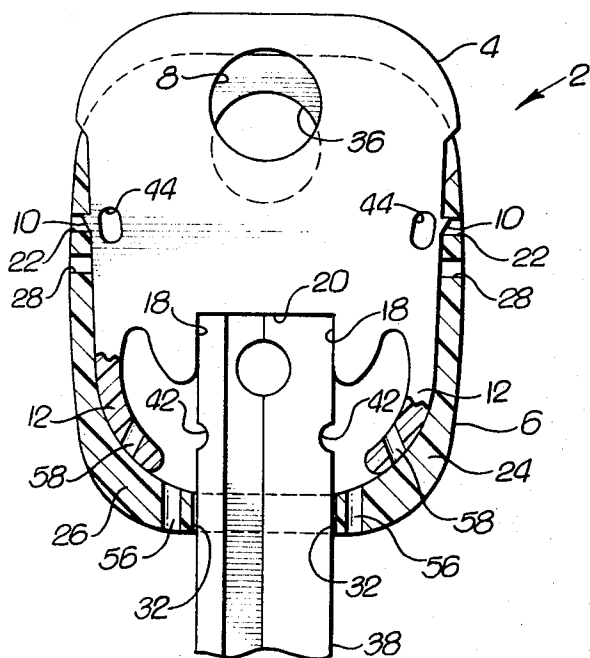


FIG. 7.

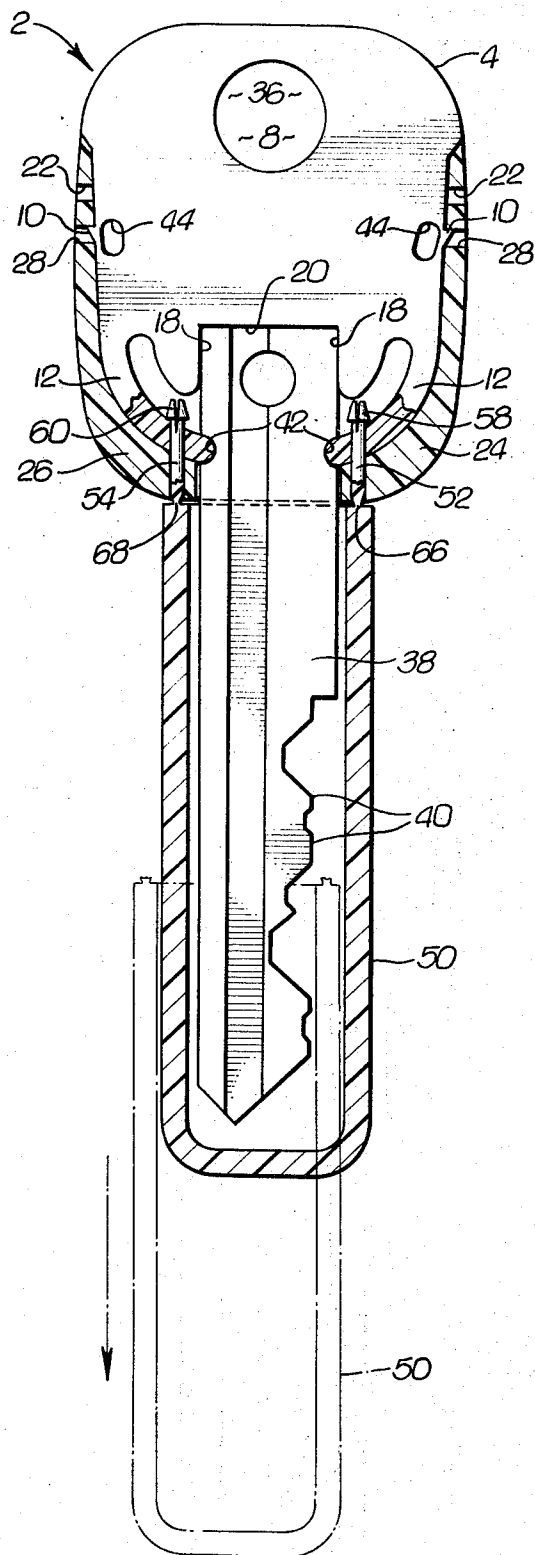
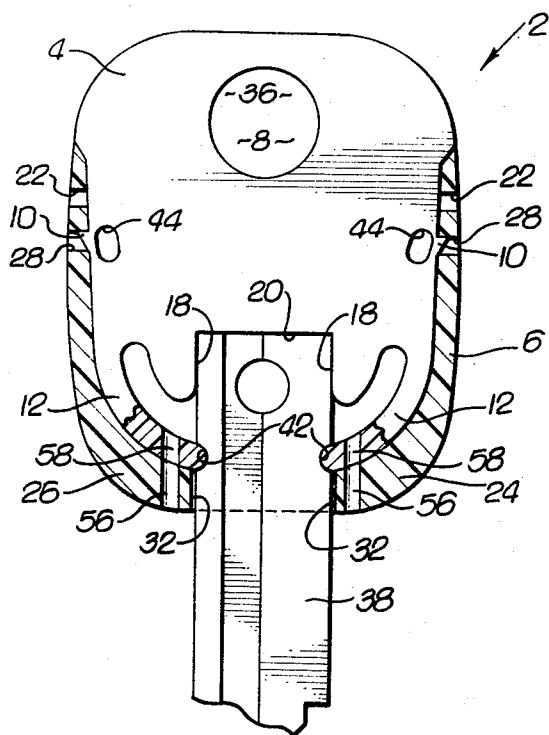


FIG. 6.



MULTIPLE PART KEY FOR CONVENTIONAL LOCKS

BACKGROUND OF THE INVENTION

This invention relates to locks and, more particularly, to a multiple part key for operating conventional locks.

The key, according to this invention, is an improvement of my invention for a key and holder disclosed in my co-pending patent application, Ser. No. 5,479, filed Jan. 26, 1970 and now abandoned, and of my co-pending patent application, Ser. No. 138,675, filed on Apr. 29, 1971 and now U.S. Pat. No. 3,729,965.

Prior to the aforementioned patent applications, a key was traditionally formed of a one piece metal blank which had an elongated shank portion for insertion into a conventional lock and an enlarged handle end portion which was manually grasped for exerting a torque on the key to open the lock. The shank portion was formed with longitudinal grooves which were typically extruded with transverse notches for fitting the tumblers of the conventional lock as is well known. One problem associated with this type of construction is that in order to extrude the grooves in the lock shank portion, it was necessary to extend the grooves through the enlarged hand operated portion or hilt.

One attempt to obviate the disadvantages of a continuous extrusion throughout the length of the key is found in the U.S. patent to Fricke, U.S. Pat. No. 3,349,589 issued on Oct. 31, 1967. In the embodiments shown in this patent, there is disclosed a shank end portion and hilt which are assembled by pressing the hilt portion over the shank end portion of the key. However, in this construction, the hilt portion is as easily disassembled from the shank end portion as it is to assemble the two together. It is desirable to provide an assembly wherein upon connection of the hilt and shank end portions, it is rendered difficult to separate the two after assembly.

Another advantage of having a two part assembly is that various indicia indicating the source of origins such as a motel or hotel can be imprinted on a plastic hilt portion which can then be selectively joined with the shank end portion.

SUMMARY OF THE INVENTION

The invention can be described as a multiple part key for use in a conventional lock which includes a key shank having an end portion suitably shaped for insertion into a lock and having an opposite end portion for insertion into the hilt, the latter portion having means thereon for engagement by cooperating means in the hilt. A separate hilt means has a key shank guideway therein which opens to a surface thereof for receiving the opposite end portion of the shank. Resilient mounting means are provided in the hilt to mount the key shank to the hilt and to secure them together to form a completed key. The hilt comprises outer and inner telescoping parts, one of which substantially encloses the other of said parts with the one part having a first stage securing means to hold the other part in a substantially predetermined first partially assembled position whereby to receive the key shank. The one part also has a second securing means to hold the other part in a second fully assembled position whereby the resilient mounting means of the hilt is moved and held to

engage the shank to secure the hilt parts and shank together in a fully assembled completed key condition.

The shank end portion and the two part hilt portion is assembled by first assembling one part of the two part hilt portion within the other part in a first position. Then the end opposite the lock portion of the shank is inserted and the hilt parts are moved relative to each other to secure them together and the shank end portion therein to form a completed key.

BRIEF DESCRIPTION OF THE DRAWINGS:

FIG. 1 is a side elevational view of the two parts of the hilt as assembled. A portion of the sheath is broken away to indicate the location of the key shank;

FIG. 2 is another side elevational view of the hilt end portion with portions broken away to show the key shank;

FIG. 3 is a view of a shank end portion and the hilt in final assembled position taken along the lines III—III of FIG. 1;

FIG. 4 is an exploded view of two portions of the hilt assembly shown partially in cross section;

FIG. 5 is a view partially in cross section of the hilt and shank assembly during the first stage of installation;

FIG. 6 is a view partially in cross section of the hilt assembly as formed prior to insertion of the key tampering device taken along lines VI—VI of FIG. 3; and

FIG. 7 is a view partially in cross section of the total assembly. Also, to prevent tampering with, or unauthorized or undetectable use of, the key, a sheath is provided which will shear when tampered with, thus indicating to the next user of the key that the key shank has been tampered with and possibly placed in use.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT:

A detailed description of a preferred exemplary embodiment of the multiple part key, in accordance with the present invention, will now be made with reference to the appended drawings. Referring firstly to FIG. 1, the fully assembled key is illustrated with a shank 38 received in a two part hilt, indicated generally at 2. Shank 38 is enclosed within a sheath 50 secured in a manner as hereinafter disclosed to the two part hilt assembly. As seen in FIGS. 1 and 7, shank 38 is provided with a first end which is suitably shaped for insertion into a lock. The opposite end is provided for insertion into the hilt and includes means, as indentations 42, for being engaged by cooperating means, as hereinafter described, provided in the hilt.

As is particularly contemplated within the present invention, the hilt is provided in two telescoping parts, which when fully assembled, lock themselves and the associated shank in assembled condition ready for use. The two part hilt assembly is indicated generally at 2 in the drawings. The hilt assembly is formed of a first inner part 4 and a second, generally surrounding, outer part 6. These two parts may be assembled through a two stage operation, as illustrated in FIGS. 5 and 6 into the fully assembled position of FIG. 7 as hereinafter explained.

Inner hilt part 4 is provided with an aperture 8 for reception of a key chain therethrough. Outer hilt part 6 is also provided with a mating aperture 36, the apertures 8 and 36 being aligned for reception of a key

chain, or the like, therethrough, as seen in FIG. 7 when the parts are fully assembled.

The inner hilt part 4 is provided with a guideway for reception of the opposite end of shank 38, such guideway being formed by the sidewalls 18 and inner end wall 20 of part 4 as seen in FIGS. 4 through 7.

Cooperating means are provided in the hilt assembly for retaining or securing shank 38 thereto in an assembled relation. Such cooperating means, in the exemplary embodiment, includes the provision of resilient fingers 12 depending from the major body portion of part 4. As seen in FIG. 5, the two opposed resilient finger portions 12 of part 4, formed integrally thereof, are normally in a position in which they do not engage shank 38. However, because of the resiliency of the finger portions 12 and the cooperation of the curved cooperating sidewalls 24 and 26 of the outer hilt part, assembly of part 4 into part 6 fully causes the finger portions 12 to be resiliently deformed into a shank grasping and holding position of FIG. 6. As seen in FIGS. 5 and 6, outer part 6 has opposed walls 32 forming a minor portion of the shank guideway provided in the hilt assembly.

In accordance with the key construction of the present invention, the two part hilt assembly may be assembled in a two stage operation. Inner hilt part 4 is provided with outwardly projecting detents 10. Immediately inwardly of the two opposed detents 10, inner hilt part 4 has cutout portions 44 in order to provide a resilient mounting of the detents integrally of the main body of the part 4. The outer part 6 is provided with apertures or indent portions 22 for a first stage of assembly and apertures or indent portions 28 for receiving detents 10 in a second stage of assembly.

Referring now to FIG. 5, the inner and outer hilt parts are shown in a first stage assembled condition. Inner part detents 10 are illustrated in engagement with outer part apertures or indentations 22. With the hilt parts in this first stage of assembly, the opposite end of shank 38, from the free lock engaging end, may be inserted into the guideway of the hilt formed by the outer part walls 32 and inner part walls 18 and 20.

Following the first stage assembly illustrated in FIG. 5, after insertion of the shank 38 into the hilt parts, inner part 4 is moved inwardly of outer part 6 into the position of FIG. 6, which constitutes a second stage or final assembled condition for the hilt parts. As can be seen by comparing FIGS. 5 and 6, movement of part 4 inwardly of part 6, with detents 10 popping from indentations 22 to 28, moves the resilient finger portions 12 of the inner part down the inwardly convergent sidewalls 24 and 26 of the outer part to force the free ends of the finger portions into locking engagement with the indentations 42 in the shank. The engagement between detents 10 of inner part 4 and the indentations or apertures 28 of outer part 6 hold the hilt parts in the fully assembled condition, as seen in FIG. 6, and thus hold the resilient finger portions 12 in the shank locking condition.

As also particularly contemplated within the present invention, means are provided for preventing tampering or unauthorized use of the multiple part key construction of the present invention. In the exemplary embodiment, such means comprises the provision of a sheath surrounding the portions of shank 38 in which the tumbler engaging portions 40 of the shank are provided. Such sheath 50 is shown in assembled condition

in FIG. 1. In the condition of the key illustrated in FIG. 1, the shank 38 may not be placed in use without removal of sheath 50. A transparent, or not, plastic material may be employed for construction of sheath 50, the material needing only sufficient strength to withstand normal handling preparatory to breaking the sheath away from the hilt at predetermined shear locations.

Frangible or shearing means are provided for mounting sheath 50 to the assembled hilt parts in such a manner that the shank may not be withdrawn from the sheath, through disassembly of the hilt parts, nor can the sheath be removed from the assembled hilt parts, without breaking or shearing predetermined portions of the mounting means. In the exemplary embodiment, such means comprise the provision of shear pins 52 and 54 as best seen in FIG. 7 on the upper ends of sheath 50. While sheath 50 is of generally rectangular hollow construction, pins 52 and 54 are preferably solid pins provided at opposite end portions of the open upper end of sheath 50 as seen in FIG. 7, and in phantom line in FIG. 2. Each of the pins 52 and 54 is provided with a reduced diameter portion 66 and 68, respectively, where the pins are expected to shear when the sheath is pulled from the hilt assembly.

Expandable split conical head portions 58 and 60 are provided at the upper free ends of each of the shear pins 52 and 54, as seen in FIG. 7, to facilitate a one-way assembly of the shear pins and associated sheath to the assembled hilt parts. As seen in FIG. 6, the outer hilt part 6 is provided with shear pin receiving passages or bores 56. The resilient finger portions 12 of inner hilt part 4 are also provided with passages or bores 58 which align with shear pin receiving bores 56 when the two hilt parts are in fully assembled relation, as seen in FIG. 6. With the parts in thus assembled relationship, the sheath and shear pins may be assembled by forcing the split conical heads 58 and 60 through the shear pin bores 56, 58 of the hilt parts until they pass there-through, expand and thus lock shear pins 52 to the assembled parts as seen in FIG. 7. By providing shear pins 52 through portions of both the inner and outer hilt parts as disclosed herein, the hilt parts may not be disassembled to allow a rearward withdrawal of shank 38 from sleeve 50 without destruction of the shear pins.

As can be seen from the foregoing detailed description of a preferred exemplary embodiment of the multiple part key in accordance with the present invention, an extruded key shank may be easily assembled and securely grasped and held within a multiple part hilt via resilient portions provided on one portion or part of the hilt which are held in such shank engaging position due to the presence of the other hilt part, the two parts being more or less telescoped into assembled relationship. Further, unauthorized use of the key is prevented through the provision of sheath 50. However, the key may be readily and easily placed into authorized use by merely grasping the sheath and breaking it away from the hilt via the frangible interconnecting means provided. Emergency pass keys or control keys may thus be maintained in a non-usable "stored" condition ready for use when needed. In the event of an unauthorized entry of a locked area, the use or non-use of the pass key can be easily determined by merely checking to see whether the pass key sheath has been broken from the hilt or not.

Having thus described a preferred exemplary embodiment of the multiple part key construction in ac-

cordance with the present invention, it should be understood by those skilled in the art that various modifications, alterations and adaptations thereof may be made within the scope of the present invention which is defined by the following claims.

I claim:

1. In a multiple part key having a separate shank and hilt, the shank including a first end which is suitably shaped for insertion into a lock and an opposite end for insertion into the hilt and having means thereon for engagement by cooperating means in the hilt, the improvement in hilt construction comprising the provision of:

a first hilt part for receiving said shank opposite end portion and including said cooperating means, the latter having resilient means for engaging said shank received therein, said resilient means of said first hilt part being normally in a non-engaging position relative to said shank opposite end received in said first hilt part before assembly of said hilt part; and

a second hilt part for assembly to said first hilt part and including means for holding said resilient means in a shank engaging portion upon assembly to said first hilt part, said second hilt part being provided with means for engaging and moving said resilient means into said shank engaging position upon assembly of said hilt parts, said shank being thereby retained in said hilt.

2. In a multiple part key having a separate shank and hilt, the shank including a first end which is suitably shaped for insertion into a lock and an opposite end for insertion into the hilt and having means thereon for engagement by cooperating means in the hilt, the improvement in hilt construction comprising the provision of:

a first hilt part for receiving said shank opposite end portion and including said cooperating means, the latter having resilient means for engaging said shank received therein;

a second hilt part for assembly to said first hilt part and including means for holding said resilient means in a shank engaging portion upon assembly to said first hilt part, said shank being thereby retained in said hilt; and wherein said first and second hilt portions have detent means thereon for holding said portions in assembled relation.

3. In a multiple part key having a separate shank and hilt, the shank including a first end which is suitably shaped for insertion into a lock and an opposite end for insertion into the hilt and having means thereon for engagement by cooperating means in the hilt, the improvement in hilt construction comprising the provision of:

a first hilt part for receiving said shank opposite end portion and including said cooperating means, the latter having resilient means for engaging said shank received therein;

a second hilt part for assembly to said first hilt part and including means for holding said resilient means in a shank engaging portion upon assembly to said first hilt part, said shank being thereby retained in said hilt;

sheath means for encasing a key shank free end including tumbler engaging portions thereof; and frangible mounting means for mounting said sheath to said hilt, removal of said sheath to place said

shank into use with a lock requiring breaking of said frangible mounting.

4. The improvement in multiple part key of claim 3 wherein said frangible mounting means comprises: shear pins formed integrally of said sheath.

5. The improvement in multiple part key of claim 3 wherein said frangible mounting means comprises: shear pin means provided on said sheath; pin mounting bores formed through aligned portions of both of said two hilt parts when in assembled relation; and

means on the free ends of each of said shear pins for preventing withdrawal of said pins from said bores after assembly thereof to thereby require breaking of said mounting means to remove said sheath from said hilt.

6. A multiple part key for use in a conventional lock comprising:

a key shank having an end portion suitably shaped for insertion into a lock and having an opposite end portion including indentations therein providing a first stop portion facing toward said one end portion;

a separate hilt means having a key shank guideway therein which opens to a surface thereof for receiving the opposite end portion of the shank therein, and

mounting means associated with both the key shank and hilt for securing them together to form a completed key, said mounting means comprising outer and inner hilt parts, said outer hilt part substantially enclosing said inner hilt part, said parts having first detent means for holding them in a first position of partial assembly to facilitate reception of said key shank and second detent means for holding them in a fully assembled position, said mounting means being operated into a shank mounting condition by the assembly of said parts, to secure together said completed key.

7. A multiple part key, according to claim 6 wherein said mounting means includes resilient finger portions formed on said inner hilt part and mating indentations on said outer hilt part.

8. The method of assembling a key shank and a hilt member having a first and second parts which comprises:

inserting said second hilt part into said first hilt part to a first predetermined partially assembled interlocked position,

inserting said key shank into a guideway formed by said first and second parts, and thereafter moving said second hilt part still further into said first hilt part into a fully assembled interlocked position and thereby locking said shank against withdrawal therefrom

whereby said hilt parts and said key shank interlock together to form a complete key.

9. In a multiple part key for use in a conventional lock, said key including a key shank having one end suitably shaped for insertion into a lock and having an opposite end for insertion into a hilt, said opposite end portion having detent means, the improvement comprising the provision of:

a separate two part hilt portion for receiving said opposite end portion of said shank, resilient finger means on said hilt portion adapted to engage said detent means on said shank, and

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means provided in said hilt for forcing said finger means into said shank detent means upon assembly of said two part hilt parts together.

10. A tamper-proof key comprising:

a hilt portion for receiving a key shank;

a cover for said key shank adapted to be received around said key shank;

shearable means on said cover for mounting said cover to said hilt, and

means on said hilt portion for receiving said shearable means whereby removal of said cover from said hilt required shearing of said shearable means

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to thereby indicate tampering.

11. In a two part hilt assembly for holding a key shank, the improvement comprising:

finger means on one of said hilt portions, said finger means being adapted to be received by detents on said key shank when said shank is assembled to said one of said hilt portions; and

means on the other of said hilt portions adapted to force said finger means into engagement with said key shank detents upon assembly of said parts together.

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