Aug. 21, 1956 E. L. SCHLAGE 2,759,280

KEY BOW DEVICE

Filed July 19, 1954

FIG_1

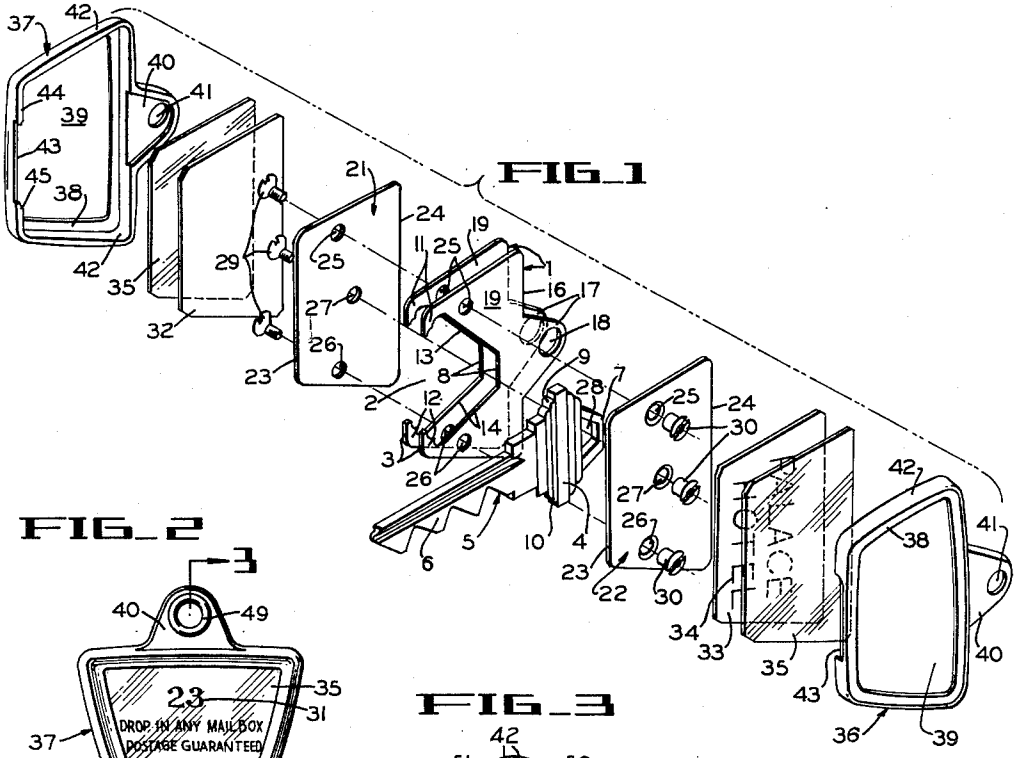


FIG_2

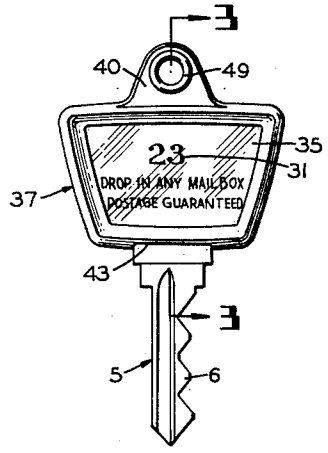


FIG_3

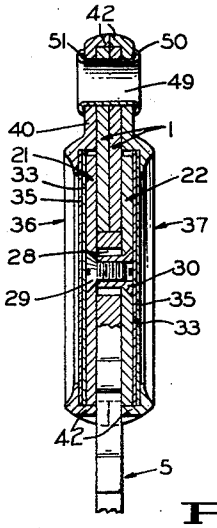


FIG_6

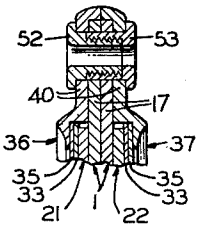


FIG_4

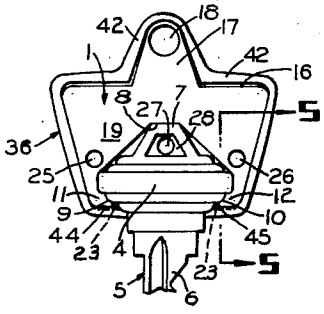
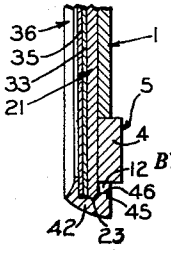


FIG_5



INVENTOR.
ERNEST L. SCHLAGE
BY
Boyken, Mohler & Wood
ATTORNEYS

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KEY BOW DEVICE

Ernest L. Schlage, Burlingame, Calif., assignor to Schlage Lock Company, a corporation

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2 Claims. (Cl. 40—2)

This invention relates to devices for use in connection with keys for door locks and is particularly concerned with that portion of a key known as the bow.

This invention is related to devices of the same character shown in copending applications Serial Nos. 303,881 and 369,270, filed August 12, 1952 and July 21, 1953, respectively.

It is an object of this invention to provide a key bow device which is capable of permitting variation in the shape and size of a key bow according to the needs or desires of the owner.

It is also an object of this invention to provide a key bow device which serves to distinguish a key provided with such device by feel as well as by appearance.

Another object of this invention is the provision of a key bow device which allows the owner to characterize an ordinary key as belonging to such owner and as being the proper key for a particular lock.

The further object of this invention is the provision of a key bow device which, when installed on a key of the usual kind, associates with that key various distinguishing markings, advertising matter, or other desired information within the choice of the owner.

A still further object of this invention is the provision of a key bow device of inexpensive construction and which avoids the need for individualized dies and manufacturing operations.

It is another object of this invention to provide a key bow device capable of providing for the user greater ease of lock turning and opening.

It is still another object of this invention to provide a key bow device which may be secured to a key bow in such a manner that it cannot be readily removed by ordinary tampering, but which may be speedily removed and replaced by authorized persons.

Yet another object of this invention is the provision of a key bow device including a sheet adapted to carry certain identifying indicia and which device facilitates turning the key in a lock without transmitting any turning effort to such sheet.

Other objects and advantages will become apparent from the following description taken in connection with the accompanying drawings in which:

Fig. 1 is an exploded, perspective view of the key bow device of this invention showing the various parts in spaced relation with a key;

Fig. 2 is a plan view of the assembled device of Fig. 1;

Fig. 3 is an enlarged cross sectional view taken along line 3—3 of Fig. 2;

Fig. 4 is a plan view of the device of Fig. 2 with the top frame, display plate and cover plate removed showing the key disposed with its bow in the cavity of the matrix plate;

Fig. 5 is an enlarged cross sectional view taken along line 5—5 of Fig. 4; and

Fig. 6 is a partial cross sectional view similar to Fig. 3, but showing a modified form of fastening element.

In detail, referring to Fig. 1, the device of this invention is seen to comprise a pair of identical matrix plates **1** which may be formed of any suitable material in any desired shape. The main portion of such matrix plates is shown in trapezoidal form, each having a cavity **2** opening laterally outwardly of opposite sides of matrix plates **1** and outwardly of one edge **3** of said matrix plates. Such cavities have a contour generally complementary to the edge contour of a flat key bow **4** of a conventional key, generally designated **5**, and are for the purpose of receiving such key bow therein with the key shank **6** extending outwardly of edge **3** of said matrix plates. Cavities **2** are of such contour that the end edge **7** of key bow **4** remote from key shank **6** engages the inner side walls **8** of such cavity and the shoulders **9**, **10** of key bow **4** that are directed longitudinally of key shank **6** engage a pair of lips **11**, **12**, respectively, that are integral with each matrix plate **1** and define the portion of cavity **2** adjacent side edge **3** of such matrix plate.

Between lips **11**, **12** and inner side walls **8** of cavities **2** opposed side walls **13**, **14** are formed in conformity with the general contour of key bow **4**, but are spaced slightly therefrom so that frictional engagement between the key bow and the side walls of the cavity exists only at three spaced points corresponding to lips **11**, **12** and the inner side wall **8** of each cavity **2**. By this structure, each cavity **2** may be economically formed and, in addition, a three-point support for the key is provided which effectively secures the key in place and prevents twisting thereof relative to the matrix plate.

The combined thickness of matrix plates **1** when superposed one on the other is substantially equal to the thickness of key bow **4**. It is obvious that a single matrix plate could be substituted for the pair shown; but it has been found that a pair of matrix plates, each substantially one-half the thickness of the key bow, are more easily and readily stamped to greater accuracy.

Protruding from edge **16**, opposite edge **3**, of each matrix plate **1** and coplanar therewith is an ear **17** having an aperture **18** for receiving a key ring or the like therethrough. Said ears and apertures are in registration when said matrix plates are superposed as before described.

As best seen in Fig. 4, the extent of matrix plates **1** is considerably greater than that of key bow **4** and cavity **2** so as to form a substantial planar margin **19** around said cavity. The shape shown for plates **1** is not critical as long as margin **19** is provided.

A pair of identical cover plates **21**, **22** are adapted to overlie matrix plates **1** including cavities **2** but excepting ears **17**. The shape and size of said cover plates are similar to the main portion of matrix plates **1**, except that the dimension between edges **3** and **16** of said matrix plates is slightly less than the dimension between corresponding edges **23** and **24** of cover plates **21**, **22**, for a purpose to be described. To facilitate manufacture of this device said cover plates may be of the same thickness as matrix plates **1**, but such is not required.

Cover plates **21**, **22** and marginal portion **19** of matrix plates **1** are each provided with a pair of registering holes **25**, **26** (those in the cover plates being countersunk) which are spaced apart on opposite sides of cavities **2**. A third countersunk hole **27** is provided in each of said cover plates registering with the usual hole **28** in the upper end of key bow **4**. Male and female, flat-headed screws **29**, **30**, respectively, are adapted to be inserted through holes **25**, **26**, **27** and **28** to rigidly secure cover plates **21**, **22** and matrix plates **1** in superposed position over key bow **4** as shown in Fig. 3. It is to be understood that holes **27** and the screws therethrough are not

absolutely necessary but serve the purpose of assuring securement of key bow 4 in place.

Furthermore, it is pertinent to note at this point that substantially greater leverage is provided by the extended-area plates 1, 21, 22 for turning the key in a lock. If the matrix and cover plates were of substantially the same extent as key bow 4, such additional leverage would not be obtained.

When the cover plates and matrix plates are secured together as above described, display plates 32, 33, which are substantially coextensive in area with cover plates 21, 22, may be positioned over said cover plates, respectively. These display plates may be of paper or cardboard or any other inexpensive material. Display plate 33 may carry indicia 34 (Fig. 1) indicating, for example, the name and address of the hotel or other hostelry to which the key 5 belongs and display plate 32 may carry indicia 31 indicating a room number or other desired notation (Fig. 2).

Over each display plate 32, 33 there is preferably provided a thin sheet 35 of transparent plastic or the like through which indicia 31, 34 may be viewed. Sheets 35 also serve to protect display plates 32, 33 against soiling and marring.

For the purpose of holding display plates 32, 33 and transparent sheets 35 in superposed relation relative to cover plates 21, 22, a pair of frames generally designated 36, 37 are provided on opposite sides of said cover plates. These frames, which may be sheet metal stampings, are identical and the same reference numerals will be applied to like parts of each.

Each frame 36, 37 comprises a planar, main portion 38 having a relatively large central opening 39 through which the adjacent display plate may be viewed. Extending outwardly of one side of each said frame is an integral ear 40 adapted to overlie ears 17 and having aperture 41 therethrough registering with apertures 18.

At right angles to main portion 38 is a peripheral flange 42 which generally conforms to the outer periphery of matrix plates 1 including ears 17. Each flange 42 is provided with a rectangular notch 43 adjacent edges 3 of matrix plates 1 and equal in depth to about one-half the thickness of key 5 so that the juncture between the key bow and key shank is received within opposedly opening notches 43 when frames 36, 37 are secured to opposite sides of cover plates 21, 22.

Adjacent opposite ends of notches 43 flanges 42 are each provided with a pair of projections 44, 45 which are directed inwardly of frames 36, 37. It will be seen from Figs. 4, 5 that, because of the difference in dimensions between edges 23, 24 of cover plates 21, 22 and between edges 3, 16 of matrix plates 1, when said plates are assembled as described a pair of recesses 46 are provided between edges 23 and along edges 3, one on either side of key 5 for receiving projections 44, 45 therein.

The distance between the portion of flange 42 adjacent edge 16 of matrix plate 1 and projections 44, 45 is substantially equal to the dimension between edges 23, 24 of cover plates 21, 22 so that said cover plates will have just sufficient clearance to slip between and be embraced by flanges 42 (Figs. 3, 4). The distance between the portion of flange 42 adjacent the outer end of ear 17 and the portion of said flange adjacent said projection is substantially equal to the distance between the outer end of ear 17 and edges 23 of cover plates 21, 22 when said cover plates and matrix plates 1 are assembled as described. Hence, in inserting the assembled plates and key into one of frames 36, 37 it is first necessary to insert edge 23 of the proper cover plate behind projections 44, 45, pulling the key downwardly (Fig. 4) so as to insert projections 44, 45 into recesses 46. Edges 16, 24 of matrix plates 1 and cover plates 21, 22, respectively, are then seen to be spaced from the upper side of flange 42 and the outer end of ear 17 is aligned with adjacent flange 42 of frame 36 and may be pressed into such frame. This construction then, prevents withdrawal of the cover plates, matrix plates, and key, from one of frames 36, 37 as long as the outer end of ear 17 is in engagement with its associated portion of flange 42.

When the various parts, including both frames 36, 37 are assembled as above described, a fastening element such as grommet 49 (Figs. 2, 3) may be passed through the registering openings 18, 41 and swaged over to form radially outwardly extending lips 50, 51 engaging the ears 40 of frames 36, 37 thus securing all of the parts together. It will be understood that the inner connection between frames 36, 37 by the projections 44, 45 and recesses 46 prevents movement of said frames outwardly away from the matrix and cover plates from side edges 3, 23, respectively, and disassembly of the device is impossible without removing grommet 49. This structure makes the device completely tamperproof although disassembly is readily effected when the grommet 49 is removed with suitable equipment by authorized persons.

In lieu of grommet 49, ears 17, 40 may be secured together by the use of a pair of hollow, male and female threaded ferrules 52, 53 (Fig 6). The outward appearance of the particular structure of Fig. 6 is exactly the same as that of Figs. 2, 3, and if a reasonably tight fit is effected between ferrules 52, 53, there is little chance of the ferrules accidentally backing off and little likelihood of them being removed by tampering without the use of appropriate tools.

The assembled key and key bow device provides a very neat article which is convenient for carrying and easy to handle. The central aperture through grommet 49 or ferrules 52, 53 may be large enough to accommodate an ordinary key ring or key hook. It is also pertinent to note that the relatively large extent of the key bow device in comparison with the key bow itself increases the torque which may be applied by the user when the key is inserted in a lock. In addition, it is apparent that the resisting torque cannot be transferred to the relatively light display plates 32, 33, transparent sheets 35, and frames 36, 37 because such torque is completely resisted by the matrix plates 1 and cover plates 21, 22 which are secured together by screws 29, 30.

As previously mentioned, it is obvious that matrix plates 1 could be formed of a single sheet of twice the thickness of that shown. Alternatively, each matrix plate and its associated cover plate could be formed of a single sheet with cavity 2 formed therein to one-half the depth of key bow 4. This construction, although the easier to assemble as requiring only two parts to be secured together on key bow 4, is more expensive to manufacture. It is also obvious that a single matrix plate including one cover plate may be integrally formed with cavity 2 extending to a depth substantially equal to the thickness of the key bow 4 and with a single, planar cover plate extending across the open side of such cavity.

Although the preferred form of the invention has been described and illustrated in detail, this is not to be taken as restrictive as it is obvious that modifications could be made therein without departing from the spirit and scope of the invention.

I claim:

1. A key bow device comprising a matrix plate formed with a cavity opening laterally outwardly of the opposite sides thereof and opening outwardly of one edge thereof, said cavity having a contour generally complementary to the edge contour of a flat key bow for receiving such key bow therein with the key shank extending outwardly of said one edge, the area of said matrix plate being substantially greater than the area of such key bow to provide a margin outwardly of the periphery of said cavity except adjacent said one edge the thickness of said matrix plate being substantially equal to the thickness of such key bow, an ear formed on an opposite edge of said matrix plate from said one edge and having an aperture therethrough for receiving a key ring or the like,

a pair of identical cover plates each overlying opposite sides of said matrix plate including said cavity but excepting said ear, said cover plates extending outwardly from said one edge of said matrix plate to form a recess therebetween, means for securing said cover plates and said matrix plate together at said margin, a pair of identical, centrally-open frames each overlying opposite sides of said cover plates and said ears and adapted to secure a pair of display plates between said frames and said opposite sides of said cover plates, said frames being provided with peripheral flanges extending toward each other along the side edges of said matrix plates, integral projections on said flanges respectively extending into said recess, and releasable means for securing said frames together adjacent said ears whereby parting of said frames from said cover plates is permitted only when said last-mentioned means is released.

2. A key bow device comprising a pair of identical, superposed matrix plates each formed with a cavity opening laterally outwardly of the opposite sides thereof and opening outwardly of one edge thereof, each said cavity having a contour generally complementary to the edge contour of a flat key bow for receiving such key bow therein with the key shank extending outwardly of said one edge, the area of said matrix plates being substantially greater than the area of such key bow to provide a substantial margin outwardly of the periphery of said cavity except adjacent to said one edge, the thickness of each said matrix plate being substantially equal to one-half the thickness of such key bow, an ear formed on an opposite edge of each said matrix plate from said one edge and having an aperture therethrough for receiving a key ring or the like, a pair of identical cover plates each overlying opposite sides of said superposed pair of matrix plates including said cavities but excepting said ears, the dimension between said

edges of said matrix plates being less than the dimension between corresponding edges of said cover plates providing a recess along said one edge of said matrix plates, means flush with said cover plates for securing said cover plates and said matrix plates together at said margin and one of which means is adapted to extend through such key bow, a pair of identical, centrally-open frames each overlying opposite sides of said cover plates and said ears and adapted to secure a pair of display plates between said frames and said opposite sides of said cover plates, said frames being provided with peripheral flanges extending toward each other along the side edges of said matrix plates, integral projections on said flanges, spaced from the main portion of said frames, and respectively extending into said recess, the distance between the portion of said flanges adjacent said opposite edges and said projections being substantially equal to said dimension between said corresponding edges of said cover plates, the distance between the portion of said flanges adjacent the outer ends of said ears and the portion of said flanges adjacent said projections being substantially equal to the distance between the outer ends of said ears and said corresponding one edge of said cover plates, and releasable means for securing said frames together adjacent said ears whereby parting of said frames from said cover plates is permitted only when said last-mentioned means is released and said ears are withdrawn laterally from the portion of said flanges associated therewith.

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