United States Patent [19]

Parrock

[11] **3,727,439**

[45] **Apr. 17, 1973**

[54] **MODULAR KEY LOCK HAVING LEVER TUMBLERS WITH BENDABLE PORTIONS**

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[52] **U.S. Cl.**.....**70/355,** 70/383

[51] **Int. Cl.**.....**E05b 25/00**

[58] **Field of Search**.....70/355, 376, 377, 70/382, 383, 384, 422

[56] **References Cited**

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1,850,323	3/1932	Heyer	70/377 X
1,953,535	4/1934	Hurd	29/445
3,208,248	9/1965	Tornoe	70/383
3,315,503	4/1967	Schlage	70/383

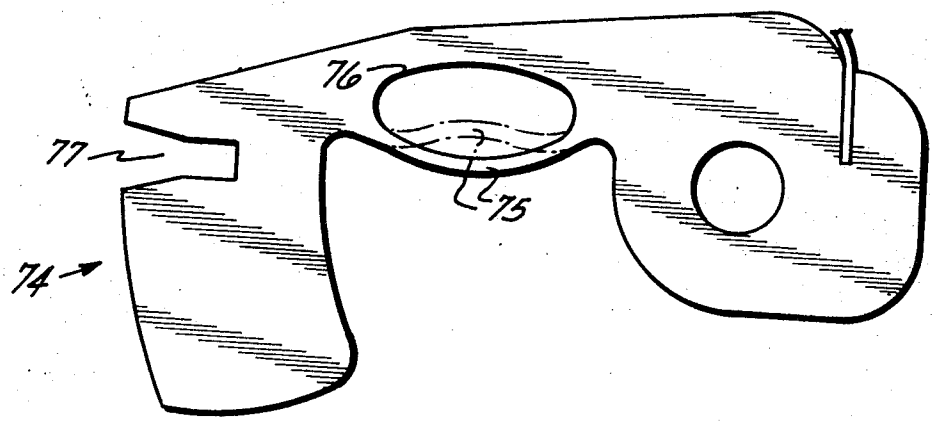
Primary Examiner—Robert L. Wolfe

Attorney—James S. Hight et al.

[57] **ABSTRACT**

A key lock which can be produced in modular form with standardized tumblers. The tumblers are levers which have bendable or deformable portions, and are fitted to a particular cut key by inserting the key into the lock and turning it while the tumblers are held against turning in predetermined position. This displaces the bendable portions of the tumblers to new positions corresponding to the respective lift heights of the key which is used to carry out the bending.

15 Claims, 7 Drawing Figures



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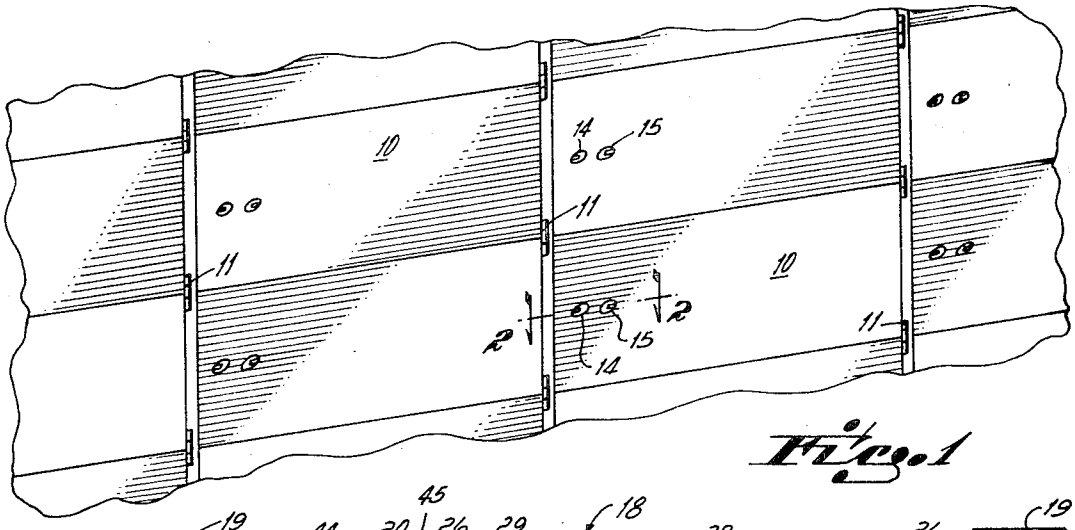

Fig. 1

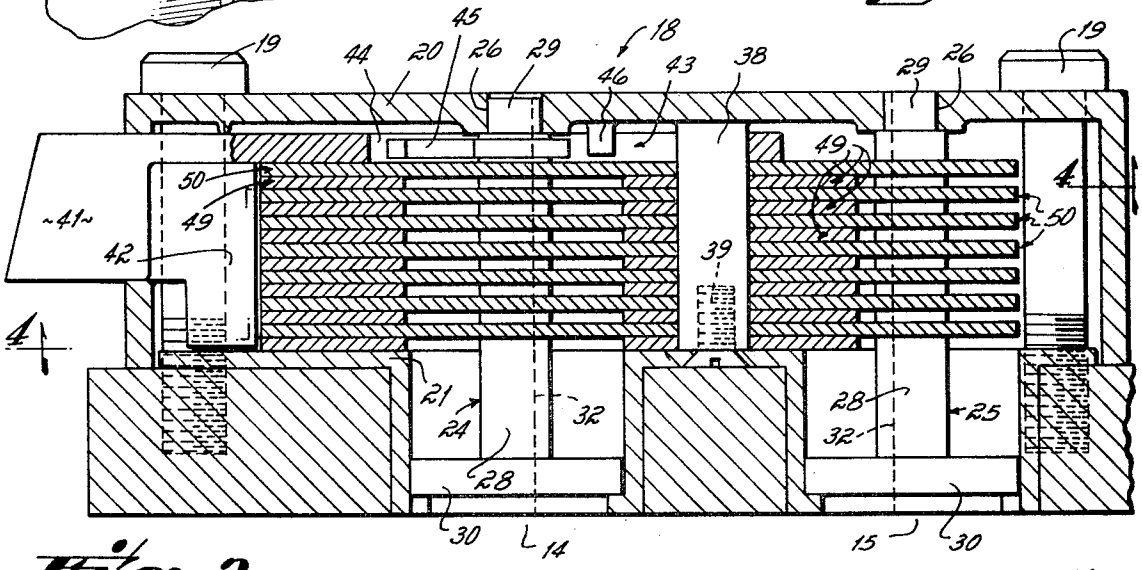

Fig. 2

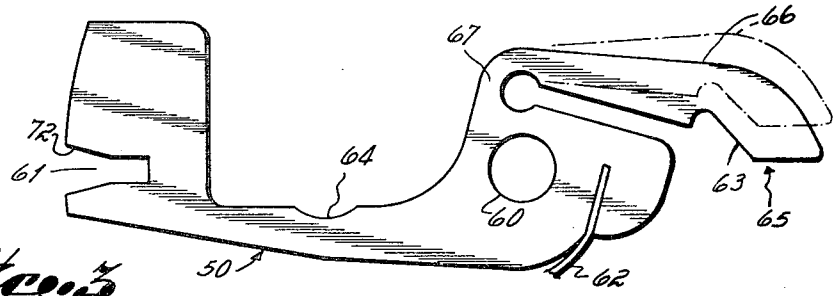

Fig. 3

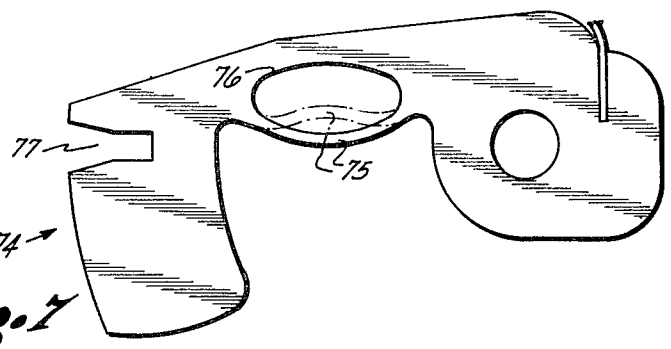

Fig. 7

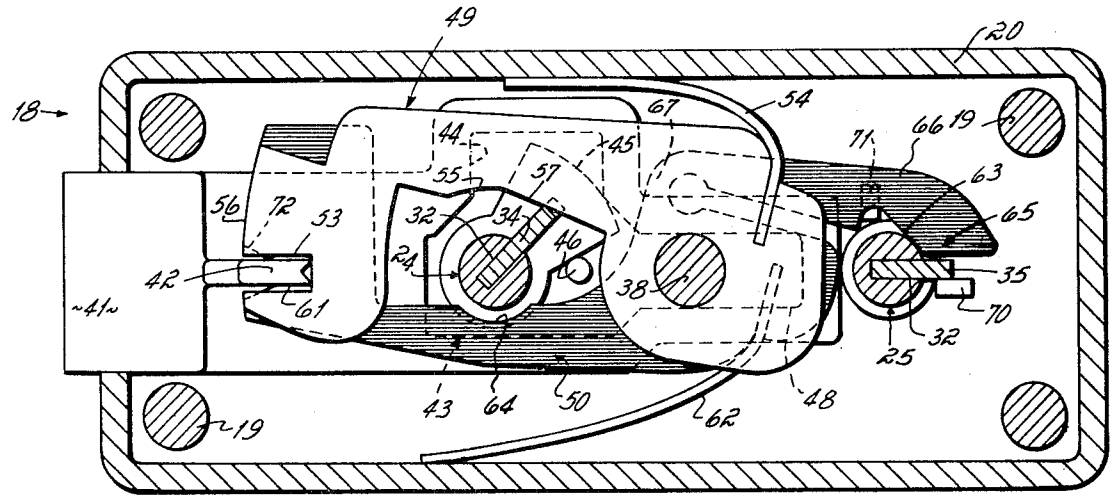

Fig. 4

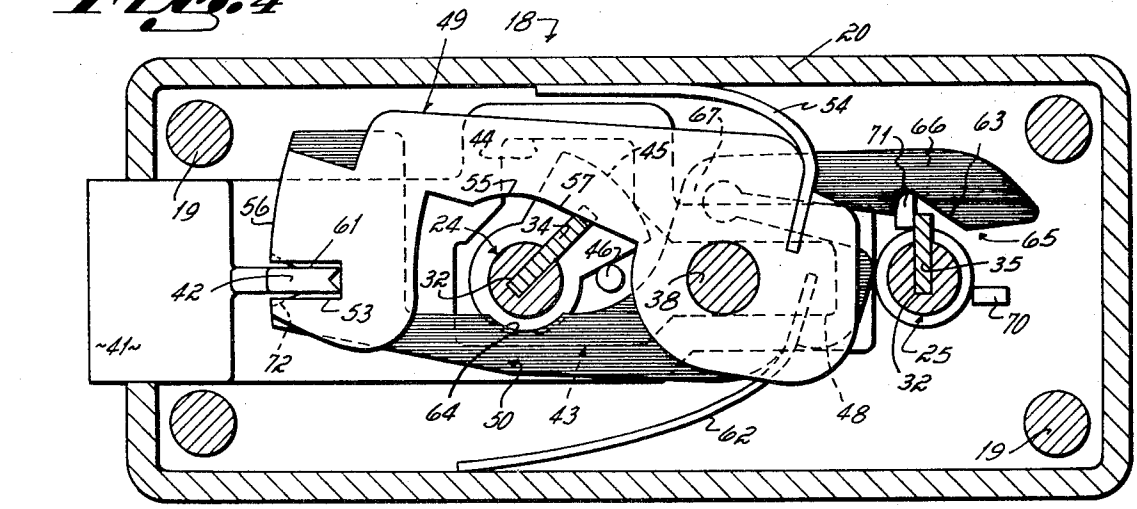

Fig. 5

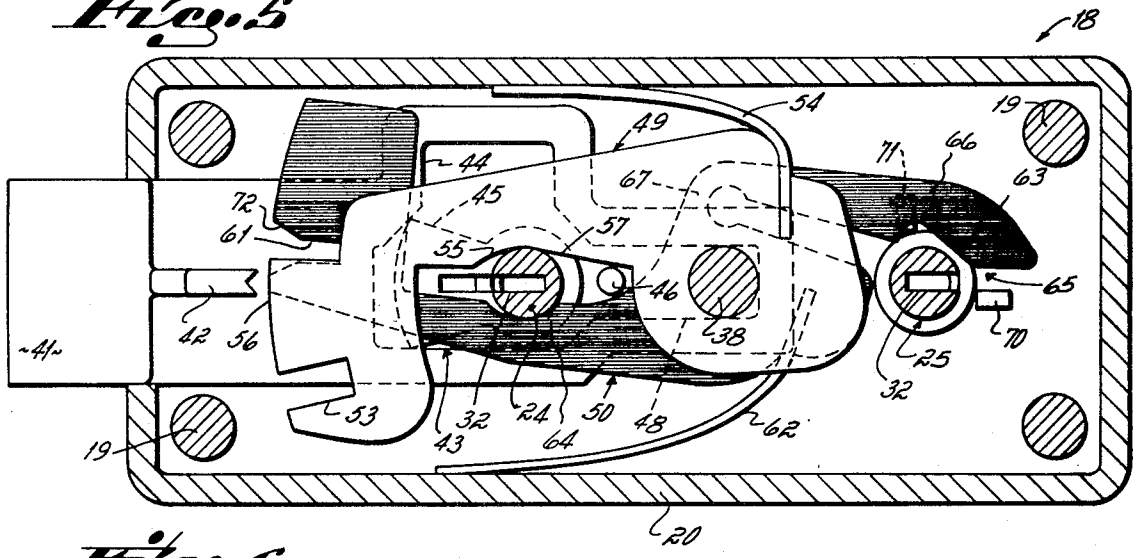

Fig. 6

MODULAR KEY LOCK HAVING LEVER TUMBLERS WITH BENDABLE PORTIONS

This invention relates to key locks of the lever tumbler type, that is, the type which includes at least one set of tumblers in the form of levers mounted for swinging movement about an axis, in response to the turning of a cut key. The invention is particularly concerned with a lock of the type described which can be produced in a standard or modular condition, not fitted to any particular key at the time it is assembled, and which thereafter can be set to any of a very large number of keys by the initial turning of any key which is selected.

The conventional key lock of the lever tumbler type includes a plurality of tumblers which are mounted for rotation about a fixed post in the lock case, with each tumbler having a gate or open slot at one end. The levers are turned about the post by a corresponding key to angular positions such that the gates of the respective tumblers are disposed in alignment to receive the bolt, and thereby permit the latter to be withdrawn. Springs urge the tumblers toward a stop and, when no key acts on the tumblers, hold them against the stop. In this "rest" mode, the stop positions the tumblers so that their gates are disaligned with respect to the bolt, and the tumblers thereby block withdrawal of the bolt. The gates are formed at different positions on the different tumblers, so that each tumbler must be turned a different amount by the key in order to align its gate with the bolt. Thus, the different lifts of the key turn the different tumblers through different angles about the post, sufficiently to bring all of the gates into bolt alignment.

To coordinate each conventional lock to the particular key with which it is to be used, the lock must be assembled with tumblers having gates at such positions that they will be aligned by the respective lifts of the key to be used. The key's lifts are cut according to a random schedule, and the lifts differ from key to key and on each individual key. Thus, each key requires a different specific set of tumblers to respond properly and be aligned by it. Literally, each lock has heretofore necessarily been built to fit one and only one key. Obviously, this has necessitated close and painstaking correlation between key and lock during lock assembly.

As can be appreciated, it is desirable to simplify lock construction to enable locks to be produced in a standardized form, without the previous requirement of individualized key-tumbler correlation, and such that as produced, all locks would be substantially identical to one another and could be fitted to different keys after assembly.

The desirability of such standardization is especially great in locks for safety deposit vaults, wherein hundreds or even thousands of locks are used, each of which requires two different keys, a bank or guard key and a customer key.

It has been a principal objective of this invention to provide a lock construction such that the lock manufacturer can build standardized locks with each tumbler identical, and which can thereafter be set or fitted to any of many different keys, merely by inserting a particular key in the lock and turning it.

The invention centers around a lever tumbler which can yield by bending in response to the initial or setting operation of the key with which it is to be used. The

bendable part of the new tumbler is a key-engaging portion. Prior to bending of this portion, it coacts with a stop against which the tumbler rests in one position; in bending, it is moved so that the tumbler thereafter rests in a different position. The surface on the tumbler which engages the stop prior to bending can be considered to be a first active stop-engaging surface. After the bending, a second stop-engaging surface becomes active. The lock is constructed of tumblers in the unbent, undeformed condition, and the respective tumblers are fitted to the corresponding lifts of the particular key by turning the key which causes the bendable portions of the tumblers to be bent.

The new tumbler comprises a lever which in assembly is mounted on a post for rotation around the post in response to turning of the key. At one end a gate is formed in the tumbler, shaped to receive the bolt when the tumbler is properly aligned, and thereby permit the bolt to be retracted.

The key-engaging portion of the tumbler is narrow or is connected to the tumbler by a narrow neck which can yield in bending. This portion is disposed to be bent when the key is first turned while the tumbler is held against turning. As manufactured, the key-engaging portion is in a position such that it will be engaged by the key, regardless of the depth of the particular key lift. Prior to first usage, the first stop-engaging surface of the tumbler rests, under the influence of a bias spring, against stop means in the case. The first stop-engaging surface positions the tumbler so that its gate is either aligned with the bolt, or is in a predetermined position with respect to the bolt. By turning the key while the tumbler is held against movement, the key-engaging portion is bent to a new position with respect to the remainder of the tumbler, the amount of the bending depending upon and varying with the depth of the particular lift of the key.

In the new or "bent" position, the first stop-engaging surface is rendered inactive or is displaced from its original position, and does not rest against the stop means at the same point. The second stop-engaging surface becomes the active stop surface, and is urged by the bias spring to a rest position in which it resides against the stop means, at an angular position such that the tumbler gate is disaligned with the bolt. Thereafter, to align the gate of that tumbler with the bolt, the proper key must be used, to bear on the key edge of the tumbler and turn the tumbler against the spring bias, to bring the gate into the proper position.

In a preferred embodiment, the key-engaging portion of the tumbler provides the first stop-engaging surface, which coacts with a first stop in the lock case. When the bendable portion is bent by the key, this first stop-engaging surface is displaced from the first stop, and no longer can bear against it in the rest condition. A second stop-engaging surface on an "unbent" part of the tumbler than coacts with a second stop in the case as the active stop, and holds the tumbler at a rest position of gate disalignment.

In another embodiment, the bendable portion itself forms the second stop-engaging surface after it has been bent. In this embodiment the stop-engaging surface coacts with the same stop before and after bending, but the stop-engaging surface is moved to a new position.

It is recognized that other locks having bendable tumbler portions are known. Schlage U.S. Pat. No. 3,315,503 shows a construction cylinder lock having tumblers in the form of pins which can be bent to shorten their effective length and thereby change them from fitting a first key, to fit a second key. A specially fitted first key is required to open the lock, prior to fitting the lock to the second key, which would be unacceptable in many applications for which the present locks are useful. Moreover, in that patent the second key must have lifts which are shallower, or less deep, than the corresponding lifts of the first key, in order to bend the pin. This reduces and limits the number of keys to which the lock can be fitted. The patent contains no disclosure concerning lever tumblers.

In Hurd U.S. Pat. No. 1,953,535, pin tumblers are shown which can be broken along predetermined lines so as to fit the lock to an individual key. Again the number of possible keys to which the lock can be fitted is relatively limited.

In Nawn, U.S. Pat. No. 2,025,293, a sliding tumbler for a cylinder lock is shown which has an end portion that is bent or arched. This is said to accommodate the irregularly serrated edge of a key, so that the tumbler will "glide" readily over horizontal ledges parallel to the key's transverse edge. The purpose is not to fit the lock to any of a large number of keys, but rather to render the lock operable by duplicate keys which differ only minutely.

In U.S. Pat. No. 1,840,323 there is disclosed a cylinder lock having sliding tumblers in which the tumblers are bendable. However, the bendable portions cannot be bent by use of the key, but must be compressed against the key by means of a special assembly tool. U.S. Pat. No. 2,058,853 is a further variant on that concept.

Quillen U.S. Pat. No. 3,255,620 shows a lock having a tumbler made from a material which can be bent, but the tumbler is resilient or elastic, and returns to its neutral position when freed. The bending is reversible, in contrast to the present lock, in which the tumbler is permanently deformed by the bending in order to retain its fit to the corresponding key.

As an example of its utility, the lock embodying the invention is especially useful in two key locks of the type used with safety deposit boxes. Since the invention was made in that environment, it is described hereinafter primarily in relation to safety deposit box locks, but it should be understood that the invention is not limited to that use.

Safety deposit box locks commonly require use of two different keys, before the box can be opened. One key, which is retained by the bank or the guard, is used first and aligns one set of tumblers. A second key, which is retained by the particular customer, must then be used to operate another set of tumblers. All the tumblers of both sets must be in their proper alignments before the bolt can be withdrawn. This prevents opening of the box by either the bank alone, or the customer alone.

Ordinarily all the boxes in a given installation will be fitted to the same guard key, so that the guard need only carry one key to operate the guard tumblers of all the locks. Different banks of course have different guard keys. Each customer's key is different, so that each customer's key can open only one single lock.

The fact that two keys are used with two sets of tumblers has caused complications in the assembly of safety deposit locks. Heretofore, in order to provide locks to fill a specific bank's requirements, the manufacturer has had to assemble all the locks to the particular bank's guard key, and each lock to a different customer's key. The locks could be assembled only after the specific bank's order was placed; this was necessary to match the guard tumblers to the particular bank's guard key. This caused substantial delay in delivery, since renewal lock orders had to include the necessary guard key information so that the tumblers could be matched at the factory assembly operation. It was virtually impossible to assemble locks for inventory in advance of order, since the guard key shape was not known in advance.

The tumblers of this invention can usefully be employed to comprise each tumbler of the set which is operated by the guard key. More generally, tumblers in accordance with the invention are useful in either or both sets of tumblers, that is, as either the guard tumblers or the customer tumblers or both in a safety deposit lock, or they can be used in single key locks. The new tumblers may comprise a portion, less than all, of any tumbler set in which they are used.

The invention can best be further described by reference to the accompanying drawings in which:

FIG. 1 is a fragmentary perspective view of a portion of a multiple safety deposit box installation and shows a typical environment of a preferred form of safety deposit lock in accordance with the invention;

FIG. 2 is a horizontal section through a preferred form of safety deposit box lock and is taken on line 2—2 of FIG. 1;

FIG. 3 is a plan of a guard tumbler including the features of the invention, as used in the preferred embodiment;

FIG. 4 is a vertical section taken on line 4—4 of FIG. 2 and shows a guard tumbler prior to bending, with the bolt retracted and the bit engaged in the gates of the guard and customer tumblers;

FIG. 5 is a view similar to FIG. 4, but shows the guard tumbler after it has been bent by the initial turning of the guard key;

FIG. 6 is a view similar to FIG. 5, but shows the lock after the bolt has been extended, with the guard tumbler disaligned from the bolt; and

FIG. 7 is a plan view of a tumbler for a single key lock, having the bendable, key set feature o the present invention.

As previously set forth, the invention is expected to find wide application in two key locks of the safety deposit box type. For that reason, this preferred embodiment of the invention is described with relation to such locks, although it should be understood that the invention is not limited to two key locks.

The safety deposit box installation shown in FIG. 1 includes a plurality of lockable doors, each designated at 10. Each door 10 is hinged at its right side, as at 11. At the left side of each box door 10, two lock key receiving portions or noses 14 and 16 are positioned, and these receive the respective keys for operating the lock which is mounted to the inside of the door. In the

lock shown for purposes of illustration, the nose **14** receives the so-called customer or "locking" key, and nose **15** receives the guard key, but this order could be reversed.

In keeping with the usual practice, a guard key, which is retained by the bank or guard, will operate guard tumblers of the locks on all of the doors **10**, and each box requires its own individualized customer key to operate customer or locking tumblers. Both the customer and guard tumblers must be aligned before the bolt can be withdrawn.

FIGS. **2** and **4-6** show the arrangement of the guard and customer tumblers within a lock. The lock **18** is fastened by machine screws **19** to the inside surface of the box door **10**, and is contained within a two part housing which includes a case **20** and a lid or cover plate **21**. The lid **21** is disposed facially against the inside surface of the door **10**. The two noses **14** and **15** are mounted to the lid, and project into cooperating apertures formed in the door **10**, substantially to the surface of the lock door, and receive the customer and guard keys respectively.

A key post **24** (which receives the customer key) and a key post **25** (which receives the guard key) are rotatably supported at their opposite ends between the noses **14** and **15**, and apertures **26, 26** in the bottom of the case **20**. Each key post **24, 25** has an elongated shank portion **28**, a smaller diameter neck **29** which is seated in the case aperture **26**, and an enlarged stepped head **30** which is carried and retained by a flange or rim in the respective nose **14** or **15**. Thus each key post **24** and **25** is rotatable within its respective journals, but cannot shift axially. As shown in FIGS. **4–6**, each key post **24** and **25** is slotted along its length, as at **32**, to receive the respective key. The customer and guard keys are designated at **34** and **35** respectively in FIGS. **4** and **5**, in which they are shown inserted within their respective key posts.

A fixed post or pivot **38** projects from the inner or back surface of the lock case toward lid **21** (see FIG. **2**), and a screw **39** which passes through the lid is threaded into this post **38** to hold the lid and case in closed relation prior to fitting to the particular door **10**. As will be seen, this post **38** conveniently serves as the pivot for each of the two sets of tumblers to be described.

Lock case **20** has an endwise opening through which the bolt **41** extends. The bolt includes a bolt pin or racking pin at **42**, and is movable between a retracted position (shown in FIG. **4**) and an extended position (shown in FIG. **2**). The bolt contains a slot **43** indicated by the dotted lines in FIGS. **4–6**. Post **38** extends through an elongated portion **48** of slot **43**, and supports and guides the bolt for sliding movement between the retracted and extended positions. Bolt slot **43** also includes a portion **44** (see FIG. **5**) which is engaged by and cooperates with a bolt thrower in the form of a key bit or foot **45** that is mounted at the inner end of a customer key post **24**. A stub or pin **46** on the lock case bottom limits the angular rotation of the dog in the clockwise direction, see FIGS. **4** and **5**, and hence the retracted position of the bolt. The end of slot portion **48** fixes the extended position of the bolt.

The lock includes a set of guard tumblers, which are operated by the guard key, and a set of customer or locking tumblers which are operated by the customer key. Either or both of these sets of tumblers may have a bendable stop feature in accordance with the invention; in the embodiment illustrated, this feature is used on the guard tumblers only, and the customer tumblers are conventional.

The customer tumblers are designated at **49** and the new tumblers, used as the guard tumblers are designated at **50**. In the particular lock shown, there are seven tumblers of each type, and they are arranged alternately with one another within the case, but it is pointed out that neither of the number nor the order of arrangement is critical. All of the tumblers **49** and **50** are levers which are pivotable about post **38**.

As shown in FIG. **2**, the tumblers of the different sets are interleaved with one another on post **38**; a customer tumbler **49** is adjacent the lid, then a guard tumbler, then a second customer tumbler, etc.

Only a single guard tumbler and a single customer tumbler are shown in FIGS. **4–6**, to simplify those drawings, but it will be apparent that the other tumblers of the respective set can be similar in outline form, except that they vary from tumbler to tumbler in respect to gate position, and hence, position of alignment.

The customer tumbler **49** is suitably in the form of a thin flat member having an aperture by which it is journalled for rotation about post **38**. At one end the tumbler includes a gate **53** shaped to receive the racking pin **42** of the bolt when properly aligned therewith. A bias spring **54** urges the customer tumbler in the counterclockwise direction around post **38**, toward a rest position in which a stop-engaging surface **55** bears against and is arrested by the side of the customer key post **24** (see FIG. **6**). In the locked condition, spring **54** holds the customer tumbler **49** in this position with the stop-engaging surface **55** against the customer key post; as shown in FIG. **6**, in this position the gate **53** of the customer tumbler **59** is disaligned with respect to the racking pin **42**. Thus the customer tumbler will block withdrawal of the bolt, since the pin **42** would bump against the end surface **56** of the tumbler.

When the customer key **34** is inserted in the slot **32** in the customer key post **24** and turned clockwise, the particular lift of the key that is positioned under the respective customer tumbler bears upon a key-engaging surface **57** of the tumbler and turns the tumbler clockwise around post **38** (compare FIGS. **6** and **4**). As this occurs, it can be seen that the gate **53** is swung upward to a position such that the gate is properly aligned to receive the bolt as shown in FIG. **4**. (This illustrates the need for proper correlation of tumbler and key; if an improper key were used, the tumbler would be turned by the lift of the key an amount which does not move the gate into alignment to receive the bolt.)

The guard tumbler **50** having the bendable feature in accordance with the invention is shown in plan form in FIG. **3**. The lock is assembled with all of its guard tumblers in the unbent condition, shown in this figure. Like the customer tumbler **49**, this tumbler is flat and relatively thin, and is mounted for rotation on post **38**, which passes through an aperture **60** in the tumbler. The tumbler has a gate **61** formed in its end and is biased in clockwise direction about post **38** by a bias spring **62**.

In contrast to the customer tumbler, the guard tumbler has two stop-engaging surfaces, a first or initially active stopaengaging surface **63** and a second or subsequently active stop-engaging surface **64**. These surfaces **63** and **64** coact with first and second stops which comprise, respectively, the guard and customer key posts **25** and **24**. The second stop-engaging surface **64** can correspond generally to the stop-engaging surface **55** of the customer tumbler, which bears on the opposite of the customer key post **24** (see FIG. **6**).

The guard tumbler has a guard key-engaging portion **65** which is presented on an elongated arm **66** that is bendable with respect to the remainder of the customer tumbler. This arm **66** also presents the first stop-engaging surface **63**. Specifically, the arm **66** is connected to the tumbler by a narrow neck **67**, which can be bent so that the key-engaging portion **65**, and the first stop-engaging surface **63**, assume a different position with respect to the gate and the second stop-engaging surface **64** (compare FIG. **5**, in which arm **66** has been bent, with FIG. **4**, which shows arm **66** in the unbent or as manufactured position).

Prior to bending the tumbler to fit the key, the first stop-engaging surface **63** is the active stop, that is, the one which controls the tumbler rest position. The bias spring **62** urges the tumbler clockwise around post **38** to a position which stop surface **63** rests against the guard key post **25** (see FIG. **4**). It can be seen that in this position the second stop-engaging surface **64** is inactive, that is, it is spaced from and does not contact the second stop, i.e., the customer key post **24**. In this position the gate **61** of the guard tumbler is disposed in alignment to receive the racking pin **42**. Thus, prior to setting to a particular guard key, use of the customer key alone will suffice to retract the bolt, since the guard tumblers are already aligned. When the guard key **35** is inserted in its slot **32** in the guard key post **25**, and the key turned, the lift of the key—regardless of its height—will come into engagement with the key-engaging portion portion **65** and will stress that portion outwardly thereby causing the neck **67** to bend and stop surface **63** to be moved. In this embodiment the key bears on the first stop-engaging surface **63**, and the key post **25** acts as the first stop. However, it is pointed out that the stop surface could be spaced from the key edge and could coact with a stop separate from the key post.

To permit the necessary bending, the material of which the tumbler **50** is made should not be resilient to the stress placed on it, but should be permanently deformed by it so that the key displaces the key-engaging portion **65** and the first stop surface **63** to a new position (as indicated in FIG. **6**) which will substantially be retained when the key is withdrawn. A suitable material is copper alloy No. 342, a high leaded brass having a hardness R_B 79–84; other appropriate materials will be recognized and can be used.

After bending, the second stop-engaging surface **64** is the active stop. When the guard key **35** is returned to its initial position and withdrawn, as shown in FIG. **6**, the biasing spring **62** holds the tumbler **50** with the stop surface **64** resting against the customer key post **24**. This surface **64** is so positioned that in this new rest position, the gate **61** is in a position of disalignment with respect to the racking pin **42**. Thereafter, in order to operate the lock, the same guard key must be used, in order to engage the key-engaging portion **65** of the tumbler and cause the tumbler to be swung about post **38** in the counterclockwise direction an amount corresponding to the amount of the bend and thereby bring the gate into alignment.

In the past, the guard tumblers on safety deposit locks have had to be assembled to match the particular guard key of the installation in which they are to be used. This face prevented inventorying of completed locks by the manufacturer, since there was no advance knowledge of the shape of the particular guard key which the guard tumblers would have to fit. The ordering bank had to supply that information, and only then could the locks be assembled.

The present invention overcomes that problem. The particular guard key can be fitted to pre-assembled locks, taken from inventory.

The customer tumblers must of course be matched to unique customers' keys but since these are random and not specified by the bank, these tumblers can be assembled in advance as well. Thus, locks having tumblers individualized to customers' keys and modularized as to guard keys can be assembled and held in inventory awaiting fitting to the particular bank's guard key upon receipt of the order. Once the nature of the guard key is known, the locks can be fitted to that key, merely by the initial use of the guard key.

To set the lock to a particular guard key, the customer key is first inserted and turned to withdraw the bolt. This can be done, since prior to bending the guard tumbler gates are held aligned to receive the bolt. The guard key is then inserted in a horizontal position (with reference to FIG. **4**) and turned counterclockwise 90°, its limits of motion being determined by two stops **70** and **71** in the lock case. The racking pin on the bolt, engaging in the gates, takes the reaction force of the bending. In this connection, it is desirable although not necessary, that the guard key gates have a slight lead or taper as designated at **72** which will accommodate slight differences in the yieldability or elasticity of the neck portion **67** which might cause a small amount of spring back or overbending, depending on the exact grain structure of the tumbler material. When thereafter the bolt is retracted, the racking pin can cam the tumbler, within a slight range of movement, sufficiently to bring it in alignment. When the guard and customer keys are both withdrawn, the bolt will be extended and all tumblers scrambled.

It should be noted that, instead of using the bolt to hold the tumblers during this bending step, a pin (insertable perpendicularly through apertures in the tumblers) or a clamp could be employed to take the reaction force, and thereby hold the tumbler during bending. Use of the bolt for this purpose, therefore, is convenient but not necessary. It is also noted that, in order to compensate for springback in bending, it is within the scope of the invention to hold each tumbler at a predetermined first position at which its gate is not necessarily aligned to receive the bolt, but such that, after bending and springback, its gate will thereafter be correctly aligned, upon subsequent use of the key, to permit the bolt to be withdrawn.

Once set, the lock shown is thereafter operated by turning the guard key first, then the customer key.

(Turning the customer key tends to withdraw the bolt, and this can be done only if the guard tumblers have already been aligned, else they will block the full rotation of the customer key.) With the guard tumblers aligned, insertion and rotation of the proper customer key **34** operates on the customer tumblers to bring them in alignment and also to cause the foot or bit **45** to engage the side of the bolt slot **44** and withdraw the bolt.

The new tumblers may be employed as less than all of the guard or customer tumblers. In other words, not all of the tumblers need be of the deformable type, so long as at least one of them is. In this case, however, the number of different keys to which the new tumblers can be set is much more limited.

As previously stated, an advantage accrues even if the new tumblers are used just for the guard tumblers, since this enables locks having individualized customer keys but standardized guard tumblers, to be built for inventory, awaiting fitting to the guard keys. However, even the need to correlate customer keys and customer tumblers can be obviated by utilizing customer tumblers in accordance with the invention.

In the embodiment just described, the new tumbler has first and second stop-engaging surfaces which are distinct and separate from one another, and which become active in one-two sequence. The stop-engaging surfaces may be combined as described below, as a single surface the position of which is moved by bending. A tumbler of this type is shown in FIG. 7 and may be used either in a single key lock, or as the customer tumbler in a lock of the type described above. In this case the tumbler **74** has a single key-engaging portion, designated by **75**. This comprises a bendable web or bridge, with an aperture **76** located adjacent to it in the tumbler. In this case, the portion **75** initially rests against the key post **24** which acts as a stop, and holds the tumbler gate **77** of the tumbler **74** in alignment to receive the bolt. With the bolt withdrawn and the bit engaged in the gate **77**, operation of the key will deform the bendable portion **75** to the position indicated by the dotted lines in FIG. 7. Thereafter, when the bolt has been extended, this new surface will, in the rest position, hold the gate in a scrambled position. Thus, rather than a separate second stop surface which replaces the first, the position of the stop surface is changed with respect to the gate.

Having described my invention, I claim:

1. In a key lock of the lever tumbler type having spring biased lever tumblers with bolt receiving gates at the ends thereof alignable to permit a bolt to be retracted, each tumbler having a key-engaging portion which is acted upon by a key, each tumbler being biased by a spring toward stop means presented in the lock case,

the improvement comprising,

at least one lever tumbler having a bendable key-engaging portion disposed to be bent by initial rotation of the key in the lock,

stop means against which said bendable portion rests under the bias of said spring prior to bending and which positions the tumbler in a predetermined first position with respect to the bolt, and against which said tumbler rests after bending in a different second position dependent upon the shape of the key, in which second position the gate is out of alignment with the bolt,

and means for preventing rotation of the tumbler when the key is turned while the tumbler is in the first position.

2. The improvement of claim **1** wherein the bendable key-engaging portion comprises an arm projecting from the tumbler which is connected to the tumbler by a yieldable neck.

3. The improvement of claim **1** wherein the bendable portion is a yieldable web adjacent an aperture in the tumbler and which is deformable by bending relative to said aperture.

4. The improvement of claim **1** wherein the stop means positions the tumbler in the first predetermined position such that the gate is in alignment to receive the bolt.

5. The improvement of claim **1** wherein the stop means includes discrete first and second stops in the lock case.

6. The improvement of claim **1** wherein the first stop is a key post.

7. In a key lock of the lever tumbler type having spring biased lever tumblers with bolt receiving gates at the ends thereof which are alignable to permit a bolt to be retracted, each tumbler having a key-engaging portion which is acted upon by a key, each tumbler being biased by a spring toward stop means presented in the lock case,

the improvement comprising,

at least one lever tumbler having a bendable key-engaging portion,

the bendable portion prior to bending presenting a first stop-engaging surface which is positioned to engage and be arrested by said stop means in a position such that the gate is in alignment to receive the bolt,

the bendable portion prior to bending being bendable by the key, if the key is turned with the tumbler held against turning, to a new position corresponding to the shape of the particular key lift which bends it,

and a second stop-engaging surface on said tumbler that is active only after said bendable portion has been bent by said key, said second stop-engaging surface than being positioned to be arrested by the stop means in the case under the influence of said spring, in a position in which said gate is disaligned with respect to the bolt.

8. The improvement of claim **7** wherein the bendable key-engaging portion comprises an arm projecting from the tumbler which is connected to the tumbler by a neck.

9. The improvement of claim **7** wherein the bendable portion coacts with a first stop in the lock case prior to bending,

and wherein the second stop-engaging surface is not on the bendable portion of the tumbler, and is so positioned that after the bendable portion has been bent it is engageable in rest position by a second stop in the case which is spaced from the first stop.

10. The improvement of claim **9** wherein the first stop is the key post of the key which bends the bendable portion.

11. The improvement of claim **7** wherein the bendable portion, after bending, becomes the second stop-engaging surface.

12. A rotatable lever tumbler for a key lock comprising,
an end portion having a gate formed therein for receiving a bolt,
means for journalling said tumbler for rotation,
a key-engaging portion disposed for engagement with a key, said key-engaging portion being deformably connected to the remainder of the tumbler so as to be bendable to a new position by said key when the tumbler is held against rotation,
a first stop-engaging surface associated with said key-engaging portion and bendable therewith, said first stop-engaging surface prior to bending being positioned so that it can be arrested by stop means in the case and when so arrested will position said tumbler in a predetermined first position,
means engageable with the tumbler to prevent it from turning when in said first predetermined position,
and a second stop-engaging surface on said tumbler, said second stop-engaging surface positioned so that it can be arrested by said stop means to arrest said tumbler in a second position at which the gate is disaligned with respect to a bolt, after said key-engaging portion has been bent.

13. In a keylock of the lever tumbler type,
a deformable lever tumbler having an end portion with a gate formed therein for receiving a bolt,
means for journalling said tumbler for rotation,
a key-engaging portion of said tumbler disposed for engagement with a key, said key-engaging portion being deformably connected to the remainder of the tumbler so as to be bendable to a new position by said key when the tumbler is held against rotation,
stop means in the case for engaging the tumbler in a rest position under bias of a spring,
the key-engaging portion prior to deformation bearing against the stop means and holding the gate in alignment to receive the bolt,
the key-engaging portion prior to deformation being engageable with the key to be deformed by the key if the latter is rotated when the bolt is engaged with the tumbler,
the key-engaging portion subsequent to deformation bearing against the stop means after the key is removed and holding the gate in a position of disalignment with the bolt.

14. In a key lock of the lever tumbler type having spring biased lever tumblers with a bolt receiving gates at the ends thereof alignable to permit a bolt to be retracted, each tumbler having a key-engaging surface which is acted upon by a key, each tumbler being biased by a spring toward stop means presented in the lock case,
the improvement wherein at least one of the tumblers has a key-engaging portion that is bendable by initial rotation of the key,
said key-engaging portion prior to bending resting against a stop in the case and holding the tumbler gate in alignment to receive the bolt,
said tumbler also having a portion that, when the key-engaging portion has been bent, rests against a stop in the case and holds the gate in disalignment with the bolt.

15. In a two key safety deposit box lock of the lever tumbler type having a set of customer tumblers operated by a customer's key and a set of guard tumblers operated by a guard key, the tumblers having bolt receiving gates at the ends thereof which in ordinary use must be properly aligned by the respective keys to permit a bolt to be retracted, each tumbler having a key-engaging portion which is acted upon by a key, each tumbler being biased by a spring toward stop means presented in the lock case,
the improvement wherein each guard tumbler has a guard key-engaging portion which is bendable and which is positioned to be bent by the initial rotation of the guard key,
said guard key-engaging portion prior to bending resting against a guard key post and holding the tumbler gate in alignment to receive the bolt when the latter is withdrawn,
said guard tumbler also having a portion that after bending by said key rests against a customer key post and holds the gate in disalignment with the bolt.

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