

[54] **HIGH SECURITY LOCK** 3,797,290 3/1974 Taylor..... 70/366

[75] Inventor: **Donald Thomas Talbot**,
Wednesfield, England

[73] Assignee: **Eaton Corporation**, Ohio

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Primary Examiner—Robert L. Wolfe
Attorney, Agent, or Firm—Teagno & Toddy

[52] **U.S. Cl.**..... **70/366; 70/276**
 [51] **Int. Cl.²**..... **E05B 29/08; E05B 47/00**
 [58] **Field of Search** **70/362, 365, 366, 276**

[57] **ABSTRACT**

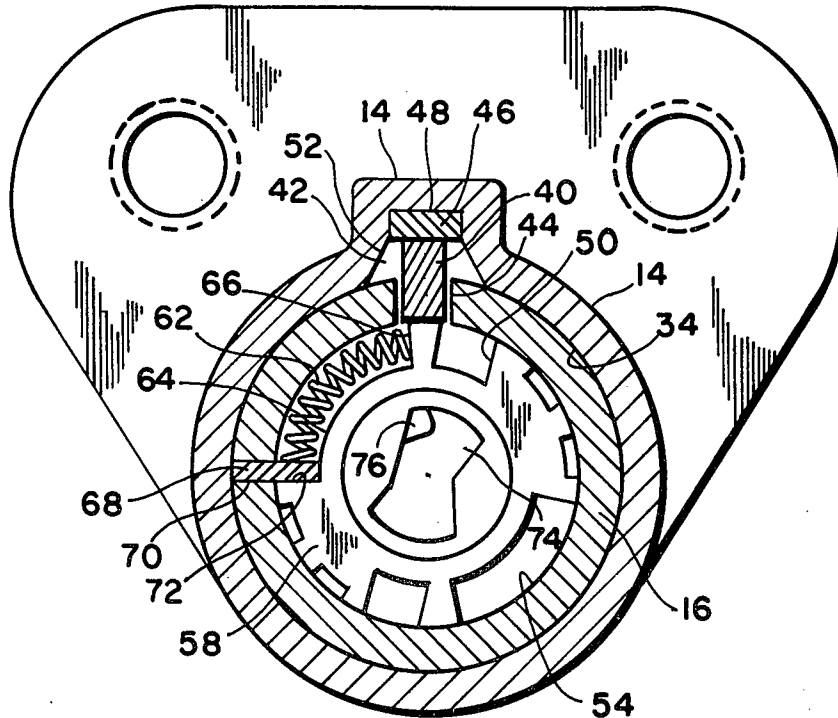
A high security key operable lock utilizing a stack of locking discs and a locking bar to provide for the actuation of a latching device when the locking discs are aligned in a predetermined position. Insertion of a key into the lock causes the locking discs to rotate and engage corresponding depressions provided on the shank of the key. When the proper key has been inserted, the rotation of the locking discs effected thereby results in the discs being aligned relative to one another which allows the locking bar to disengage permitting the actuation of the latching device upon rotation of the key.

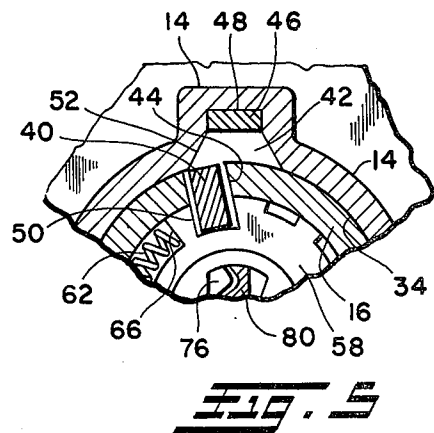
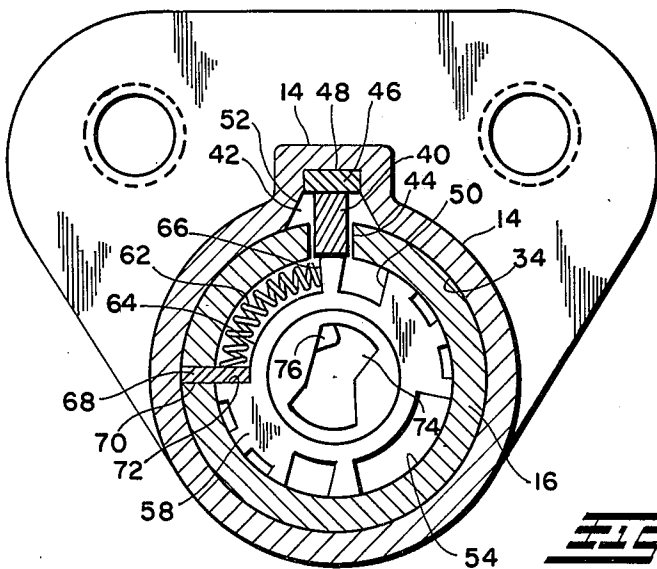
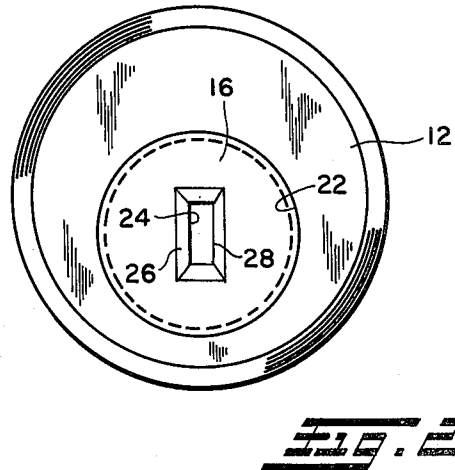
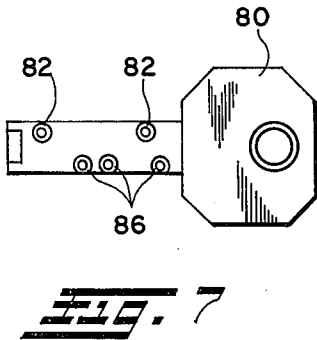
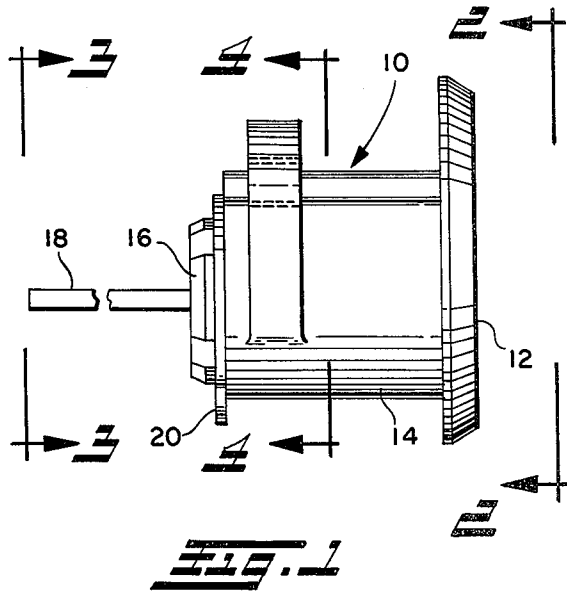
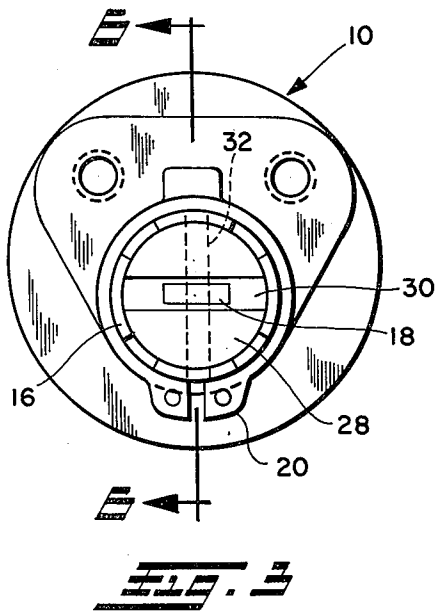
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24 Claims, 9 Drawing Figures





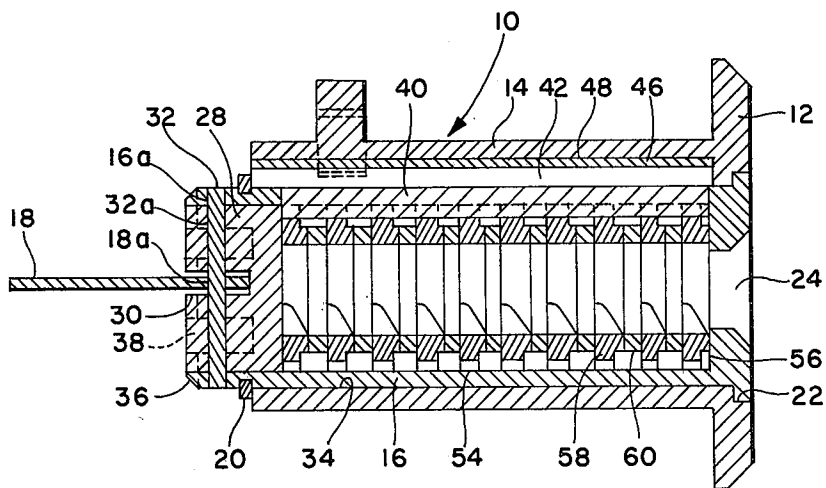


FIG. 6

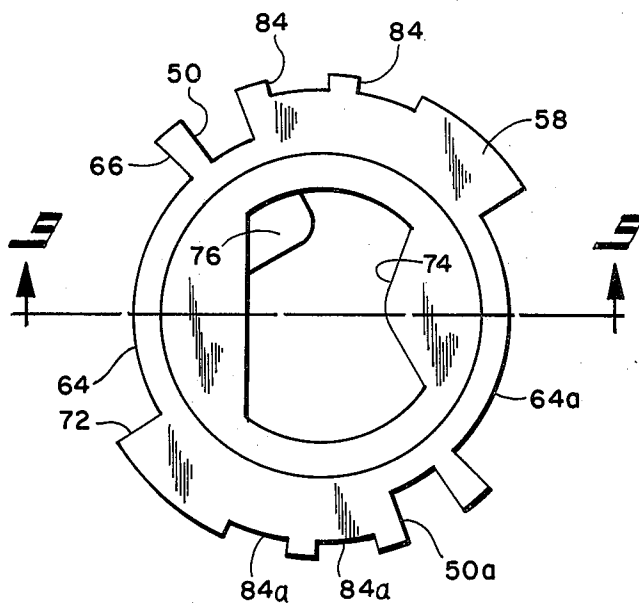


FIG. 7

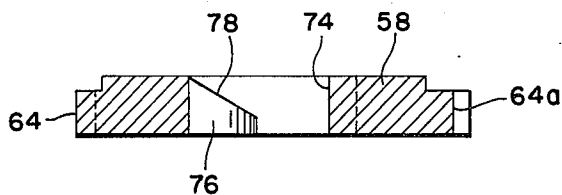


FIG. 8

HIGH SECURITY LOCK**BACKGROUND OF THE INVENTION****1. Field of the Invention**

This invention relates generally to a lock, and more particularly to a high security lock that utilizes a locking bar and a stack of locking discs having features that make the lock difficult to pick.

2. Description of the Prior Art

The pick resistancy of a lock is a very important feature. Such pick resistancy is usually obtained by varying the construction of standard pin type tumbler locks. Known prior art variations involve such features as disposing the tumblers on more than one axis or in a non-aligned relationship as disclosed in U.S. Pat. No. 3,303,677, issued to C. A. Bauer, or by using rotary disc tumblers which are operated by a specially designed key as disclosed in U.S. Pat. No. 3,789,638, issued to M. E. Roberts et al.

The lock disclosed in the Bauer patent is more difficult to pick than a standard tumbler lock having tumblers on one axis, but suffers from many disadvantages as a result of its construction. The lock disclosed in the Roberts et al. patent is a rotary disc tumbler lock, wherein a key must be inserted and then angularly rotated to align the tumblers in a predetermined manner to provide for unlocking of the lock. The pick resistancy of this lock is reduced by the large keyway required to accommodate the projections on the specially designed key, and by the lack of overlap of the rotary discs relative to the opening for the key provided in the face of the lock. Such overlap would "close" the keyway when a key is not present impeding the picking process. Since the lock disclosed in the Roberts et al patent requires a large keyway, and the keyway is always open, picking tools can be readily inserted into the lock which, in turn, decreases the pick resistancy of the lock.

Because of the lack of pick resistancy in locks presently available, it has become desirable to find a lock that is highly pick resistant and yet of a construction which would minimize manufacturing costs.

SUMMARY OF THE INVENTION

The present invention provides a solution to the problem of pick resistancy at a reasonable cost. The lock disclosed is pick resistant and has a relatively simple construction, thus minimizing manufacturing and servicing costs.

A provision of the present invention is to provide a lock which includes a housing, a lock cylinder, a plurality of locking discs, and a locking bar. A latching device is operatively connected to the lock cylinder and rotation of the lock cylinder effects movement of the latching device between locked and unlocked positions. The locking bar normally couples the lock cylinder to the housing to prevent rotation of the lock cylinder and actuation of the latching device. When the proper key is inserted into the lock, the locking discs are cammed to a position in which the locking bar is operable to couple the locking discs to the lock cylinder and uncouple the lock cylinder and the housing. Thus, insertion of the proper key enables the lock cylinder to be rotated relative to the housing to provide for actuation of the latching device.

The present invention further provides a lock including a housing, a lock cylinder, a plurality of locking

members, and a locking bar. A latching device is operatively connected to the lock cylinder and rotation of the lock cylinder effects movement of the latching device between locked and unlocked conditions. Each locking member is provided with a gating notch on the outer periphery thereof and a cam surface which engages the key when inserted into the lock. The locking bar normally occupies a first position coupling the lock cylinder to the housing. Linear insertion of the proper key causes the locking members to move so that the gating notches are aligned in a predetermined manner. This alignment allows the locking bar to be received in the gating notches coupling the locking means to the lock cylinder and uncoupling the lock cylinder from the housing to permit movement of the latching device between the locked and unlocked conditions.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a side elevation view of the lock.

FIG. 2 is a front elevation view of the lock showing the face plate and the aperture for the key.

FIG. 3 is a rear elevation view of the lock.

FIG. 4 is a cross-sectional view taken approximately along section indicating lines 4—4 of FIG. 1 showing the assembled relationship of the lock components when the actuating mechanism is in a locked condition.

FIG. 5 is similar to FIG. 4, but is a partial fragmentary view showing the assembled relation of the lock components when the actuating mechanism is in an unlocked condition.

FIG. 6 is a side cross-sectional view taken approximately along section indicating lines 6—6 of FIG. 3 showing the position of the locking bar relative to the locking discs when the actuating mechanism is in an unlocked condition.

FIG. 7 is a side elevation view of the key showing the depressions on the shank of the key.

FIG. 8 is a front elevation view of a locking disc.

FIG. 9 is a cross-sectional view of the locking disc taken approximately along section indicating lines 9—9 of FIG. 8.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring now to FIG. 1, in a preferred form of the invention, a lock 10 has a face plate 12, an outer housing 14, and a lock cylinder 16. A latch actuating bar 18 is operatively attached to the lock cylinder 16 so as to be rotatable therewith, and a snap ring 20 is provided for retaining the lock cylinder 16 within the outer housing 14. As shown in FIG. 2, the face plate 12 has an aperture 22 therein to receive the lock cylinder 16. A keyway 24 is provided in the lock cylinder 16 to receive a key for actuating the lock. The keyway 24 has inwardly tapered sides 26 to assist the insertion of the key into the lock cylinder 16.

Referring now to FIG. 3, a plug 28 with a cavity 30 therein is received in lock cylinder 16. The latch actuating bar 18 is received in cavity 30 and is retained therein by means of a pin 32 so that the latch actuating bar is rotatable with the lock cylinder 16 permitting the actuation of a latching device (not shown), such as a night latch, which is adapted to be connected thereto.

Turning now to FIG. 6, the outer housing 14 has a substantially cylindrical bore 34 therethrough. Bore 34 communicates with and is concentric with aperture 22 provided in the face plate 12. Lock cylinder 16 is received in housing bore 34 and face plate aperture 22

and is rotatable relative to the outer housing 14 and face plate 12. As lock cylinder 16 rotates, latch actuating bar 18 rotates since it is operatively attached thereto. To insure rotation of latch actuating bar 18 as lock cylinder 16 rotates, firm engagement of the plug 28 within the lock cylinder 16 and firm attachment of the latch actuating bar 18 to the plug 28 is required. Such firm engagement and attachment is provided by projections 36 on the lock cylinder 16 which mate with bosses 38 formed on plug 28 to couple the lock cylinder 16 to the plug 28, and by the use of pin 32 which is received through apertures 16a, 28a, and 18a, provides in the lock cylinder 16, plug 28, and latch actuating bar 18, respectively.

In the unlocked condition, lock cylinder 16 is rotatable relative to outer housing 14 whereas in the locked condition, the lock cylinder 16 is coupled to the outer housing 14 to prevent rotation of the lock cylinder. Whether the lock cylinder 16 is permitted to or prohibited from rotating is dependent upon the position of a locking bar 40 relative to the lock cylinder 16. In the locked condition, as shown in FIG. 4, the locking bar 40 occupies a longitudinally extending recess 42 provided in the outer housing 14. The locking bar 40 is of sufficient width in the radial direction to extend into a longitudinal slot 44 provided in the lock cylinder 16. By simultaneously occupying recess 42 and longitudinal slot 44, the locking bar 40 prevents rotation of the lock cylinder 16 relative to the outer housing 14 which, in turn, prevents rotation of the latch actuating bar 18 and the actuation of the latching device connected thereto.

Locking bar 40 is retained within recess 42 by means of a permanent magnet 46 mounted in the base 48 of recess 42. Magnet 46 attracts locking bar 40 so that the locking bar will normally occupy recess 42 and extend into longitudinal slot 44 in lock cylinder 16 coupling the lock cylinder 16 to the outer housing 14 to prevent rotation of the lock cylinder 16 and the actuation of the latching device.

In the unlocked condition, as shown in FIGS. 5 and 6, the locking bar 40 occupies the longitudinal slot 44 provided in the lock cylinder 16 and a plurality of gating notches 50, which will be described later. Movement of the locking bar 40 in the radial direction from the recess 42 in the outer housing 14 into the plurality of gating notches 50 permits rotation of the lock cylinder 16 relative to the outer housing 14 which, in turn, permits rotation of the latch actuating bar 18 and the actuation of the latching device connected thereto. Recess 42 has inclined walls 52 to form camming surfaces which engage with the locking bar 40 upon rotation of the lock cylinder 16 to drive the locking bar 40 from the recess 42 into the plurality of gating notches 50.

Turning once again to FIG. 6, the lock cylinder 16 has a substantially cylindrical concentric bore 54 therein forming a flange 56 at one end thereof. A plurality of locking discs 58, separated by spacers 60, are received in the lock cylinder bore 54 and are rotatable relative thereto. The discs 58 are restrained from axial movement by the plug 28 at one end of the lock cylinder 16 and the flange 56 at the other end thereof.

Referring again to FIGS. 4 and 5, each locking disc 58 is biased in an angular direction by a compression spring 62 which is received in a recess 64 provided in the periphery of the locking disc. One end of spring 62 is in contact with a first shoulder 66 formed on the periphery of the locking disc 58 by the recess 64. The

other end of spring 62 is in contact with a longitudinally extending support member 68 received in a recess 70 provided in the periphery of lock cylinder 16. The springs 62 bias their respective locking discs 58 in a clockwise direction, as shown in FIG. 4, so that a second shoulder 72 formed on the periphery of the locking disc 58 by recess 64 is in contact with support member 68 causing alignment of the discs relative to one another before key insertion.

Referring now to FIGS. 8 and 9, each locking disc 58 has an aperture 74 to receive the shank of a key. Extending in a substantially radial direction into aperture 74 is a projection 76 which has a chamfered surface 78 disposed to engage with the key when it is linearly inserted into the lock. The chamfered surface 78 cams the locking disc 58 as the shank of the key is inserted into the apertures 74 causing the locking discs 58 to rotate. When the proper key has been inserted into the lock 10, the angular movement of each locking disc 58 is such that the gating notches 50 are aligned relative to one another permitting the receipt of the locking bar 40 therein coupling the locking discs 58 to the lock cylinder 16 and uncoupling the lock cylinder 16 from the outer housing 14, as shown in FIG. 5. When coupled, the lock cylinder 16 will rotate as the locking discs 58 rotate which, in turn, causes the rotation of the latch actuating bar 18 and the latching device connected thereto.

Referring now to FIG. 7, the lock 10 is operated by a key 80 which has depressions 82 on the shank thereof. The depressions 82 have different depths and are spaced on the shank of key 80 so as to coincide with projections 76 on the locking discs 58 when the key 80 is fully inserted into the lock 10. Each of the depression depths results in a different angular movement of the locking disc 58 relative to the lock cylinder 16, and thus the location of gating notch 50 on the periphery of the locking discs 58 is determined by the depth of the depression that is to be engaged by projection 76. The gating notch 50 is positioned on the periphery of locking disc 58 so that it will be aligned with longitudinal slot 44 in the lock cylinder 16 if the depression 82 engaged by projection 76 on the locking disc 58 is of the proper depth. Thus, if the proper key has been inserted into lock 10, the rotation of each locking disc will be such so that each gating notch 50 will be aligned relative to every other gating notch permitting the receipt of the locking bar therein and the actuation of the latching device connected to the lock.

As shown in FIG. 8, in addition to the gating notch 50, anti-picking notches 84 are provided in the periphery of locking disc 58. Such anti-picking notches have a smaller cross-sectional area than the gating notch 58 and thus, cannot receive the locking bar 40, but give the impression of receiving the locking bar when the lock is being picked. It should be noted that the orientation of the gating notch 50 with respect to the anti-picking notches 84 on the periphery of the locking disc 58 may be different from that shown in FIG. 8. The position of gating notch 50, as shown in FIG. 8, is for key depressions 82 of maximum depth. For key depressions of lesser depth, the location of the gating notch 50 will change causing a different orientation of the gating notch with respect to the anti-picking notches 84.

As previously mentioned, when the proper key has been inserted into lock 10, each gating notch 50 is aligned relative to every other gating notch. If the key is then turned, the locking bar 40 will be cammed from

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recess 42 into the plurality of gating notches 50 that are aligned with longitudinal slot 44, causing the lock cylinder 16, together with the plurality of locking discs 58, to rotate relative to outer housing 14 thereby causing the latch actuating bar 18 to rotate which, in turn, actuates the latching device connected thereto. When the key is returned to its original neutral position, the locking bar 40 is attracted by permanent magnet 46 causing the locking bar to move radially outward from the plurality of gating notches 50 in which it was seated and reoccupy recess 42 in outer housing 14. Because of the width of the locking bar 40 in the radial direction, a portion of the locking bar remains within longitudinal slot 44 in lock cylinder 16 after the locking bar moves into recess 42, thus preventing rotation of the lock cylinder 16 relative to the outer housing 14 and the actuation of the latching device.

It should be appreciated that gating notch 50, anti-picking notches 84, and recess 64 can be repeated at positions 180° removed therefrom at 50a, 84a, and 64a. This enables the locking disc 58 to be used in a symmetrically disposed position relative to other locking discs permitting the projection 76 on the locking disc to engage depressions 82 on the opposite side of the shank of the key 80 and below the longitudinal middle line thereof. Spring 62 and support member 68 are then received in recess 64a and are positioned relative to one another to bias locking disc 58 in a clockwise direction. Additionally, other locking discs may be provided having projections positioned so as to engage depressions 86 below the longitudinal middle line of the shank shown in FIG. 7 or above the longitudinal middle line on the opposite side thereof. In this instance, the spring 62 and support member 68 are received in recess 64 or 64a and are positioned relative to one another to bias the locking disc in a counterclockwise direction. Thus, the lock 10 can be adapted to be operated by depressions located not only above the longitudinal middle line but also below the longitudinal middle line of the key shank, and on the opposite side thereof.

Inasmuch as numerous locking discs in various orientations relative to one another can be utilized in the lock, and since the depressions in the key shank can be of various depths, and since the lack of a depression can also be considered to be an additional depth, an extremely large number of different lock combinations is possible with this lock. For example, 4¹⁰ times as many different combinations can be obtained with a lock, such as this, using ten locking discs and three alternative depth depressions as compared with a pin tumbler lock having ten pins and three alternative depths for the notches in the key.

Also, not only is this lock more pick resistant because of the anti-picking notches previously described, but the configuration of the locking discs and the method by which they are biased makes the lock more difficult to pick. The locking discs are designed and biased such that the projections thereon extend across the keyway provided in the lock cylinder and overlap relative to one another making it difficult to align the locking discs by standard picking techniques.

Variations in the present invention will be apparent to those having ordinary skill in the art and the invention is limited only by the spirit and scope of the following claims.

I claim:

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1. A lock for use with a key for effecting actuation of a latching device, said lock comprising:

a housing having a substantially cylindrical bore therethrough;

a lock cylinder having a substantially cylindrical bore therein, said lock cylinder being received in said bore in said housing and being rotatable relative to said housing;

latch actuating means operatively connected to said lock cylinder and rotatable therewith to effect actuation of the latching device;

locking means received in said bore of said lock cylinder and being rotatable relative thereto in response to the linear movement of the key into the lock;

coupling means for coupling said locking means to said lock cylinder, said coupling means coupling said locking means to said lock cylinder when said lock is in an unlocked condition permitting simultaneous rotation of said locking means and said latch actuating means to effect actuation of the latching device; and

means for moving said coupling means to prevent engagement of said coupling means with said locking means when said lock is in a locked condition.

2. A lock for use with a key for effecting actuation of a latching device as defined in claim 1, wherein said locking means includes a plurality of locking discs supported in said lock cylinder for rotation relative to said cylinder, each of said locking discs having an aperture therein and a projection extending into said aperture, said apertures of said plurality of locking discs forming a keyway and said projections being operable to engage the key upon linear movement of the key into said keyway, said projections being cammed by the key upon engagement therewith to effect rotation of said locking discs relative to said lock cylinder.

3. A lock for use with a key for effecting actuation of a latching device as defined in claim 2, wherein said locking means further includes spring means biasing said locking discs toward a first position in which said locking discs are in an uncoupled relationship with said lock cylinder, said locking discs being cammed toward a second position against the biasing of said spring means by the insertion of the key into said keyway to provide for a coupled relationship between said lock cylinder and said locking discs if the proper key has been inserted into said keyway.

4. A lock for use with a key for effecting actuation of a latching device as defined in claim 3, wherein each of said plurality of locking discs further includes a gating notch on the outer periphery thereof, each of said gating notches on said plurality of said locking discs being aligned in response to the insertion of the proper key into said keyway and the engagement of said projections with the key.

5. A lock for use with a key for effecting actuation of a latching device as defined in claim 4, wherein said coupling means includes a longitudinally extending locking bar which is adapted to be received in said gating notches of said plurality of locking discs when said gating notches are aligned to couple said locking discs to said lock cylinder and uncouple said lock cylinder from said housing when the proper key is inserted into said keyway.

6. A lock for use with a key for effecting actuation of a latching device as defined in claim 5, wherein said housing includes a recess in the outer periphery

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thereof, said recess receiving said locking bar when said locking discs are in said first position, said locking bar being operable to be received in said gating notches provided on said locking discs when the proper key is inserted into said keyway camming said locking discs toward said second position to align said gating notches.

7. A lock for use with a key for effecting actuation of a latching device as defined in claim 6, wherein said lock cylinder includes a first longitudinal slot in the outer periphery thereof, said first longitudinal slot being of sufficient size to permit the passage of said locking bar therethrough, said locking bar being of sufficient width in the radial direction so as to extend into said first longitudinal slot while occupying said recess in said housing when said locking discs are in said first position to couple said lock cylinder to said housing, said width of said locking bar also being sufficient to allow said locking bar to simultaneously occupy said gating notches in said locking discs and said first longitudinal slot in said lock cylinder to couple said lock cylinder to said locking discs when said locking discs have been cammed into said second position by the insertion of the proper key into said keyway.

8. A lock for use with a key for effecting actuation of a latching device as defined in claim 6, wherein said moving means is a permanent magnet mounted in said recess, said permanent magnet attracting said locking bar into said recess to couple said lock cylinder to said housing preventing actuation of said latch actuating means when said lock is in a locked condition.

9. A lock for use with a key for effecting actuation of a latching device as defined in claim 8, wherein said recess in said housing has inwardly tapered sides to guide said locking bar into said gating notches when said gating notches are aligned and as said locking discs and said lock cylinder are rotated relative to said housing.

10. A lock for use with a key for effecting actuation of a latching device as defined in claim 5, wherein each of said locking discs further includes anti-picking notches on the outer periphery thereof, said anti-picking notches being of a size smaller than the cross-sectional area of said locking bar to prohibit receipt of said locking bar therein.

11. A lock for use with a key for effecting actuation of a latching device, said lock comprising:
 a housing;
 a lock cylinder received in said housing and rotatable relative thereto;
 latch actuating means operatively connected to said lock cylinder and rotatable therewith between a position in which the latching device assumes a locked condition and a position in which the latching device assumes an unlocked condition;
 locking means including a keyway for receiving the key therein, said locking means located in said lock cylinder and rotatable relative thereto between a first position in which actuation of said latch actuating means is prevented and a second position which provides for actuation of said latch actuating means, said locking means being rotatable between said first and said second positions in response to linear movement of the key into said keyway;
 coupling means for coupling said locking means to said lock cylinder for rotation therewith, said coupling means having a first position in which said lock cylinder and said housing are coupled to-

gether when said lock is in a locked condition preventing actuation of said latch actuating means and a second position in which said lock cylinder and said housing are uncoupled when said lock is in an unlocked condition permitting actuation of said latch actuating means in response to rotation of said lock cylinder; and

means for moving said coupling means from said second position to said first position when said lock is in a locked condition, said moving means preventing engagement of said coupling means with said locking means when said lock is in a locked condition.

12. A lock for use with a key for effecting actuation of a latching device as defined in claim 11, wherein said locking means includes a plurality of locking discs each of which includes cam means disposed thereon, said cam means being operable to engage with the key upon linear movement of the key into said keyway to rotate said locking discs to align the plurality of locking discs in a predetermined manner, said locking discs when aligned in said predetermined manner providing for relative rotation between said lock cylinder and said housing, and spring means for biasing each of said locking discs to said first position in which said lock cylinder is coupled to said housing.

13. A lock for use with a key for effecting actuation of a latching device as defined in claim 12, wherein each of said plurality of locking discs includes a gating notch disposed on the outer periphery thereof, and said coupling means includes a locking bar which is operable to be received in said plurality of gating notches when said locking discs are aligned in said predetermined manner to provide for movement of said lock cylinder relative to said housing.

14. A lock for use with a key for effecting actuation of a latching device as defined in claim 13, wherein said plurality of locking discs includes partial false notches disposed on the outer periphery thereof, said partial false notches being of a size smaller than the cross-sectional area of said locking bar to prevent said locking bar from being received therein to uncouple said lock cylinder from said housing.

15. A lock for use with a key for effecting actuation of a latching device as defined in claim 13, wherein said housing has a recess disposed therein for receiving said locking bar and said moving means includes a permanent magnet disposed in said recess for biasing said locking bar toward said recess to couple said housing and said lock cylinder when said plurality of locking discs are not aligned in said predetermined manner.

16. A lock for use with a key for effecting actuation of a latching device as defined in claim 15, wherein said recess further includes inwardly tapered surfaces which act to cam said locking bar into said gating notches to uncouple said lock cylinder from said housing when said plurality of locking discs are aligned in said predetermined manner.

17. A lock for use with a key for effecting actuation of a latching device, said lock comprising:
 a housing;
 a lock cylinder received in said housing and rotatable relative thereto;
 latch actuating means operatively connected to said lock cylinder and rotatable therewith between a position in which the latching device assumes a locked position and a position in which the latching device assumes an unlocked position;

a plurality of locking members each of which includes a gating notch disposed therein and a cam surface disposed thereon, said plurality of said cam surfaces being disposed to engage with the key when the key is linearly inserted into the lock, said cam surfaces upon engagement with said key effecting movement of said plurality of locking members to align said gating notches in a predetermined manner;

a locking bar disposed in said housing having a first position in which said housing and said lock cylinder are coupled together when said lock is in a locked condition and a second position in which said locking bar is disposed in said gating notches when said notches are aligned in said predetermined manner and said lock cylinder is uncoupled from said housing causing said lock to be in an unlocked condition; and

means for moving said coupling means from said second position to said first position when said lock is in a locked condition, said moving means preventing engagement of said coupling means with said plurality of locking members when said lock is in a locked condition.

18. A lock for use with a key for effecting actuation of a latching device as defined in claim 17, wherein each of said locking members includes a locking disc having an aperture therein, said cam surfaces extending into said aperture, said apertures of said plurality of locking discs forming a keyway and each of said cam surfaces which extend into said apertures being operable to engage the key upon linear movement of the key into said keyway to rotate said locking discs to align said plurality of locking discs in said predetermined manner, said locking discs when aligned in said predetermined manner permitting said locking bar to be disposed in said second position to uncouple said lock cylinder from said housing and couple said plurality of locking discs to said lock cylinder.

19. A lock for use with a key for effecting actuation of a latching device as defined in claim 18, wherein said plurality of locking discs includes partial false notches disposed on the outer periphery thereof, said partial false notches being of a size smaller than the cross-sectional area of said locking bar to prevent said locking bar from being received therein.

20. A lock for use with a key for effecting actuation of a latching device as defined in claim 19, wherein said housing has a recess disposed therein for receiving said locking bar and said moving means includes a permanent magnet disposed in said recess for biasing said locking bar toward said recess to couple said housing and said lock cylinder when said plurality of locking discs are not aligned in said predetermined manner.

21. A lock for use with a key for effecting actuation of a latching device as defined in claim 20, wherein said recess further includes inwardly tapered surfaces which act to cam said locking bar into said gating notches to uncouple said lock cylinder from said housing when said plurality of locking discs are aligned in said predetermined manner.

22. A lock for use with a key for effecting actuation of a latching device, said lock comprising a housing having a substantially cylindrical bore therethrough, a lock cylinder having a substantially cylindrical bore therein and a second longitudinal slot in the periphery thereof for receiving a longitudinally extending support member, said lock cylinder being received in said bore

in said housing and being rotatable relative to said housing, latch actuating means operatively connected to said lock cylinder and rotatable therewith to effect actuation of the latching device, a plurality of locking discs received in said bore of said lock cylinder and being rotatable relative thereto, each of said locking discs having an aperture therein, a projection extending into said aperture, and a recess on the outer periphery thereof which defines a shoulder at one end of said recess, said apertures of said plurality of locking discs forming a keyway and said projections being operable to engage the key upon linear movement of the key into said keyway, spring means received in said recess and being oriented within said recess so that one end thereof is in contact with said shoulder formed by said recess and the other end thereof is supported by said support member, said spring means biasing said locking discs toward a first position in which said locking discs are in an uncoupled relationship with said lock cylinder, said locking discs being cammed toward a second position against the biasing of said spring means by the insertion of the key into said keyway, and coupling means for coupling said locking discs to said lock cylinder, said coupling means coupling said locking discs to said lock cylinder when said locking discs have been cammed into said second position by the insertion of the proper key into said keyway and the engagement of said projections with the key permitting simultaneous rotation of said locking discs and said latch actuating means to effect actuation of the latching device.

23. A lock for use with a key for effecting actuation of a latching device, said lock comprising a housing having a substantially cylindrical bore therethrough, a lock cylinder having a substantially cylindrical bore therein, said lock cylinder being received in said bore in said housing and being rotatable relative to said housing, latch actuating means operatively connected to said lock cylinder and rotatable therewith to effect actuation of the latching device, a plurality of locking discs received in said bore of said lock cylinder and being rotatable relative thereto, each of said locking discs having an aperture therein, a projection extending into said aperture, and a gating notch on the outer periphery thereof, said apertures of said plurality of locking discs forming a keyway and said projections being operable to engage the key upon linear movement of the key into said keyway, a portion of said locking discs being symmetrically disposed relative to the other locking discs permitting the engagement of said projections with both sides of the key, spring means biasing said locking discs toward a first position in which said locking discs are in an uncoupled relationship with said lock cylinder, said locking discs being cammed toward a second position against the biasing of said spring means by the insertion of the key into said keyway, and coupling means coupling said locking discs to said lock cylinder, said coupling means coupling said locking discs to said lock cylinder when said locking discs have been cammed into said second position aligning said gating notches by the insertion of the proper key into said keyway and the engagement of said projections with said key permitting simultaneous rotation of said locking discs and said latch actuating means to effect actuation of the latching device.

24. A lock for use with a key for effecting actuation of a latching device, said lock comprising a housing having a substantially cylindrical bore therethrough, a lock cylinder having a substantially cylindrical bore

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therein, said lock cylinder being received in said bore in said housing and being rotatable relative to said housing, latch actuating means operatively connected to said lock cylinder and rotatable therewith to effect actuation of the latching device, a plurality of locking discs received in said bore of said lock cylinder and being rotatable relative thereto, each of said locking discs having an aperture therein, a projection extending into said aperture, and a gating notch on the outer periphery thereof, said apertures of said plurality of locking discs forming a keyway and said projections being operable to engage the key upon linear movement of the key into said keyway, said projections on said locking discs being provided with a chamfered surface which cams said locking discs in an angular direction during insertion of the key into said keyway,

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spring means biasing said locking discs toward a first position in which said locking discs are in an uncoupled relationship with said lock cylinder, said locking discs being cammed toward a second position against the biasing of said spring means by the insertion of the key into said keyway, and coupling means for coupling said locking discs to said lock cylinder, said coupling means coupling said locking discs to said lock cylinder when said locking discs have been cammed into said second position aligning said gating notches by the insertion of the proper key into said keyway and the engagement of said projections with the key permitting simultaneous rotation of said locking means and said latch actuating means to effect actuation of the latching device.

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