ABSTRACT OF THE DISCLOSURE

A flexible shackle lock having a housing, in one end of which an elongated flexible cable extends for securement therein, a latch member located in the housing and receiving the other end of the cable in a locked position thereof, a cylinder rotatably mounted in the housing and having a key slot formed therein into which an acceptable externally applied key is inserted for rotating the cylinder, a restricting member being located in the housing for restricting rotation of an unacceptable key that is inserted in the cylinder and the cylinder being arranged for engaging the latch member when the cylinder is rotated by an acceptable key, wherein the cable end is released from the latch member for withdrawal from the housing.

The present invention relates to a flexible shackle lock. More particularly, the present invention relates to a lock construction that includes a sheathed flexible cable, one end of the cable being secured in a lock housing and the other end of the cable being releasably locked in the housing by a unique latching device.

Flexible cable locks have been known heretofore and have been used for locking those articles that require an extendable cable rather than the usual rigid metal shackle construction. These prior known flexible cable locks were satisfactory for the purposes intended, but normally they were complex in construction and, accordingly, were relatively expensive to manufacture. The present invention is not only inexpensive to manufacture but also is relatively uncomplicated in comparison to the prior known flexible cable locks. In this connection, the flexible shackle lock of the present invention includes an elongated sheathed cable, one end of which is fixed in a housing. The other end of the cable is adapted to be releasably secured to a latch member that is fixed in the housing, the latch member being engageable by a cylinder member that is mounted in the housing and is adapted to be rotated by a key of acceptable design. Since a variety of keys must be provided for the locks as manufactured, the present invention further incorporates a unique yet simple restricting means for preventing rotation of the cylinder unless an acceptable key is inserted therein. A novel combination member is incorporated in the housing as one form of restricting the rotation of the cylinder, and as will be described, other modified forms of restricting means are contemplated for preventing rotation of the cylinder.

Accordingly, it is an object of the invention to provide a flexible shackle lock in which a latch member is provided for releasably locking an end of a flexible cable in a lock housing, the latch member being released only upon insertion and rotation of a key of acceptable design in a lock cylinder of the lock.

Another object of the invention is to provide a flexible shackle lock having a housing in which means are provided for restricting rotation of a cylinder within the body portion except upon insertion of an acceptable key therein.

Still another object is to provide a combination member for use in a flexible shackle lock that cooperates with the lock cylinder for permitting rotation only of an acceptable key that is inserted within the lock cylinder.

Other objects, features and advantages of the invention will become apparent as the description thereof proceeds when considered in connection with the accompanying illustrative drawings.

In the drawings which illustrate the best mode presently contemplated for carrying out the present invention:

FIG. 1 is a perspective view of a flexible shackle lock embodied herein showing the ends of the flexible cable secured within the lock housing in the locked position thereof;

FIG. 2 is a sectional view taken along lines 2-2 in FIG. 1 and showing one form of a construction for restricting rotation of an unacceptable key;

FIG. 3 is a view similar to FIG. 2 showing the lock cylinder that is disposed in the lock housing being located in the rotated position thereof, wherein the removable end of the flexible cable is released for withdrawal from the lock housing;

FIG. 4 is a sectional view taken along lines 4-4 in FIG. 2;

FIG. 5 is a sectional view taken along lines 5-5 in FIG. 3;

FIG. 6 is a view similar to FIG. 2 but showing a combination member for restricting movement of the lock cylinder;

FIG. 7 is a view taken along lines 6-6 in FIG. 5;

FIG. 8 is a sectional view taken along lines 7-7 in FIG. 5;

FIG. 9 is an exploded perspective view of the form of the invention illustrated in FIGS. 8-8;

FIG. 10 is a view similar to FIG. 8 but showing a key inserted into the lock cylinder that is located in the lock housing;

FIG. 11 is a sectional view taken along lines 11-11 in FIG. 10;

FIG. 12 is a view similar to FIG. 11 but showing the position of the lock cylinder after rotation thereof by an acceptable key, wherein an end of the cable is released for withdrawal from the lock housing;

FIG. 13 is a perspective view showing additional forms of combination members that may be incorporated in the lock housing; and

FIG. 14 is a sectional view similar to FIG. 5 but illustrating the use of the invention as an electrical interlock.

Referring now to FIG. 1, the flexible shackle lock embodied in the present invention is illustrated and is generally indicated at 10 therein. As shown the flexible shackle lock 10 is comprised of essentially an elongated flexible cable generally indicated at 12 and a body portion or lock housing generally indicated at 14 and in which the components of the lock 10 are located. As illustrated in FIG. 2, the elongated cable 12 is defined by an inner core 16 consisting of a plurality of wire strands that are wound to form a conventional core construction. Surrounding the core 16 is a sheath 18 formed of a plastic material, such as nylon or other similar plastic material, that is normally extruded around the core 16. Fixed to one end of the cable 12 is a rivet 20 which, as shown in FIGS. 2 and 3, is permanently mounted within the lock housing 14. Fixed to the other end of the cable 12 is an end connector 22, to the outermost end of which a head 24 having a reduced neck section 26 is joined.

In order to lock the cable 12 to the housing 14, a latch member generally indicated at 28 is provided and is formed in a generally U-shaped configuration. The end rivet 20 of the cable 12 is located invariably of the closed end of the latch member 28 and in the form of the invention as illustrated in FIGS. 2 through 5 is securely fixed thereto. The latch member 28 is formed of flat spring stock and is defined by opposed legs 30 and...
32 that terminate in inwardly directed jaws 34 and 36. The jaws 34, 36 have arcuate grooves (FIG. 9) formed therein and are disposed adjacent to the end of the housing 14 in which the end connector 22 of the cable 12 is received. As seen in FIGS. 1 and 4, the housing 14 is defined by portions 38 and 40 that are hollowed out to define a central chamber therebetween when secured together. Screws 41 are employed for joining the housing portions 38 and 40 together in secure rotation, and in order to accommodate the end connector 22 of the cable 12, the ends of the housing portions 38 and 40 are formed with appropriate grooves 42 and 44 as further illustrated in FIG. 4. Similar grooves are formed on the opposite ends of the housing portions 38 and 40 for accommodating the end of the cable 12 to which the rivet 20 is fixed.

When the end connector 22 is located in the locked position thereof, the jaws 34 and 36 of the latch member 28 are located in engagement therewith, the grooved ends of the jaws receiving the reduced neck section 26 therebetween. Since the legs 30 and 32 are normally located in the position shown in FIG. 2, the jaws 34, 36 will prevent withdrawal of the end connector 22 from the housing 14.

As will be described hereinafter, the legs 30 and 32 are adapted to be flexed outwardly upon rotation of a key for retracting the jaws 34 and 36 to the position illustrated in FIG. 3, wherein the end connector 22 is rotated within the housing 14 for unlocking the flexible shackle lock.

In order to provide for release of the end connector 22 from engagement with the jaws 34 and 36 of the latch member 28, a lock cylinder 46 is located in the housing 14, the longitudinal axis of the cylinder 46 being perpendicular to the longitudinal axis of the housing 14. The lock cylinder 46 includes a circular forward end portion 48 (see FIG. 9) to which an intermediate web 52 is integrally joined, the web 52 defining a cam operator as will be described.

Joined to the other end of the web 50 is a circular rear end portion 50, the forward end portion 48, web 52 and rear end portion 50 having a slot 54 extending therethrough for receiving a key indicated at 56 in FIG. 5. The cylinder 46 is rotatably secured in place in the housing 14 by nestling the rear end portion in a recess 57 and extending the forward end portion 48 into an opening 59 formed in the housing portion 40. It is also seen that access to the cylinder forward portion 48 is through the opening 59. As seen in FIG. 3, the lateral dimension of the web 52 is such that when the cylinder 46 is rotated to the position illustrated in FIG. 3, the sides of the web 52 engage the legs 30 and 32 of the latch member 28 to force them outwardly for separating the jaws 34 and 36. Thus, when the key 56 is inserted in the slot 54 and rotated to the position illustrated in FIG. 3, the end connector 22 is released from engagement with the jaws 34 and 36 of the latch member 28 and may be removed from the housing 14 to open the lock.

Obviously, it is required that only a key of acceptable design be permitted to rotate with the cylinder 46 when the key is inserted in the slot 54, and for this purpose restricting means are provided for preventing rotation of an unacceptable key that may be inserted in the slot 54 of the cylinder 46. As illustrated in FIGS. 2 and 3, this restricting means is defined by opposed fingers 58 and 60 that are joined to the legs 30 and 32, respectively, of the latch member 28. The fingers 58 terminate in spaced lugs 62, while the fingers 60 terminate in spaced lugs 64. The spacing of the lugs 62 and 64 will vary for each lock and will correspond to the relative spacing of notches that are formed in the shank of a key of acceptable design that may be rotated with the cylinder 46. Thus, if an unacceptable key is inserted in the slot 54 of the cylinder 46, the notches and projections formed in the shank of the key will not align with the spaced lugs 62 and 64 in the fingers 58 and 60, and accordingly the unacceptable key may not be rotated with the cylinder 46. It is seen that the lugs 62 and 64 may be varied as to the spacing thereof to define any number of combinations that could be used with keys of corresponding design.

In order to further increase the number of keys that would be available for use and thus vary the combinations available, an upstanding lug 66 struck out of the leg 30 of the latch member 28 is provided and is spaced in accordance with a corresponding notch in an acceptable key.

As seen in FIGS. 2 and 3, the side walls formed in the end portions 48, and web 56, that define the slot 54 are also formed with a specific configuration in the form of longitudinal projections 68 and 70 that are adapted to accommodate an acceptable key of a particular design. Thus, the longitudinal projections 68 and 70 are adapted to receive corresponding longitudinally extending grooves formed in the opposed walls of the acceptable key.

In order to assure that the key inserted in the cylinder 46 is formed with the corresponding grooves for receiving the notches 68, 70, a further restraining element in the form of a spring catch 72 is provided. The spring catch 72 as shown in FIGS. 2 and 3 is fixed to the leg 30 of the latch member 28 and overlies the rear surface of the rear portion 50 of the cylinder 46. The spring catch 72 is designed to prevent rotation of the cylinder 46 unless a key is moved into engagement therewith and for this purpose, the rear end portion 50 of the cylinder 46 is provided with a shoulder indicated at 74 in FIG. 5. The spring catch 72 normally engages the shoulder 74 to prevent rotation of the cylinder 46. However, when an acceptable key 56 is inserted into the slot 54 of the cylinder 46 and is pushed to the rearmost limit thereof, the leading edge of the key will engage the spring catch 72 and will move it rearwardly out of engagement with the shoulder 74, thus releasing the cylinder 46 for rotation with the key. The key 56 may then be rotated, provided, of course, that the key is of acceptable design and will clear the lugs 62, 64 and 66.

In use, the flexible cable 12 is placed around the object to be locked in position, and the end connector 22 is then inserted between the jaws 34 and 36 of the latch member 28. Since the head 24 of the end connector 22 is rounded as indicated in FIGS. 2 and 3, the end connector 22 may be pushed into the locked position by separating the jaws 34 and 36 until the jaws snap over the reduced neck section 26 behind the head 24. When it is desired to release the end connector 22 for unlocking the flexible cable 12, an acceptable key 56 is inserted into the slot 54 of the cylinder 46 and rotated therewith. As the cylinder 46 rotates, the edges of the web 52 are moved into engagement with the legs 30 and 32 to force the keys 34 and 36 apart. The end connector 22 is thus released for removal from the housing 14.

Referring now to FIGS. 6 through 12, a modified form of the flexible shackle lock is illustrated and includes essentially those elements illustrated and described above. The housing 14 in the modified form of the invention also includes the portions 38 and 40 that are retained in position by the screws 41. The cable 14 has an end connector 20 joined thereto on one end thereof and the end connector 22 joined to the other end thereof. The end connector 22 also terminates in the rounded head 24. The lock cylinder 46 located within the housing 14 in the modified form of the invention is constructed substantially identical to that described above and includes a forward portion 48 and 64 will vary for each lock and will correspond to the relative spacing of notches that are formed in the shank of a key of acceptable design that may be rotated with the cylinder 46. Thus, if an unacceptable key is inserted in the slot 54 of the cylinder 46, the notches and projections formed in the shank of the key will not align with the spaced lugs 62 and 64 in the fingers 58 and 60, and accordingly the unacceptable key may not be rotated with the cylinder 46. It is seen that the lugs 62 and 64 may be varied as to the spacing thereof to define any number of combinations that could be used with keys of corresponding design.

In order to further increase the number of keys that would be available for use and thus vary the combinations available, an upstanding lug 66 struck out of the leg 30 of the latch member 28 is provided and is spaced in accordance with a corresponding notch in an acceptable key.

As seen in FIGS. 2 and 3, the side walls formed in the end portions 48, and web 56, that define the slot 54 are also formed with a specific configuration in the form of longitudinal projections 68 and 70 that are adapted to accommodate an acceptable key of a particular design. Thus, the longitudinal projections 68 and 70 are adapted to receive corresponding longitudinally extending grooves formed in the opposed walls of the acceptable key.

In order to assure that the key inserted in the cylinder 46 is formed with the corresponding grooves for receiving the notches 68, 70, a further restraining element in the form of a spring catch 72 is provided. The spring catch 72 as shown in FIGS. 2 and 3 is fixed to the leg 30 of the latch member 28 and overlies the rear surface of the rear portion 50 of the cylinder 46. The spring catch 72 is designed to prevent rotation of the cylinder 46 unless a key is moved into engagement therewith and for this purpose, the rear end portion 50 of the cylinder 46 is provided with a shoulder indicated at 74 in FIG. 5. The spring catch 72 normally engages the shoulder 74 to prevent rotation of the cylinder 46. However, when an acceptable key 56 is inserted into the slot 54 of the cylinder 46 and is pushed to the rearmost limit thereof, the leading edge of the key will engage the spring catch 72 and will move it rearwardly out of engagement with the shoulder 74, thus releasing the cylinder 46 for rotation with the key. The key 56 may then be rotated, provided, of course, that the key is of acceptable design and will clear the lugs 62, 64 and 66.

In use, the flexible cable 12 is placed around the object to be locked in position, and the end connector 22 is then inserted between the jaws 34 and 36 of the latch member 28. Since the head 24 of the end connector 22 is rounded as indicated in FIGS. 2 and 3, the end connector 22 may be pushed into the locked position by separating the jaws 34 and 36 until the jaws snap over the reduced neck section 26 behind the head 24. When it is desired to release the end connector 22 for unlocking the flexible cable 12, an acceptable key 56 is inserted into the slot 54 of the cylinder 46 and rotated therewith. As the cylinder 46 rotates, the edges of the web 52 are moved into engagement with the legs 30 and 32 to force the keys 34 and 36 apart. The end connector 22 is thus released for removal from the housing 14.
As more clearly illustrated in FIG. 9, a spring catch 76 is joined to the housing portion 38 and is adapted to engage the shoulder 74 for normally preventing rotation of the cylinder 46. It is understood that when an acceptable key is inserted into the slot 54 of the cylinder 46 and pushed to the limit therein, the forward end of the key will engage the spring 76 and will move it out of engagement with the shoulder 74, thereby enabling the cylinder 46 to be rotated.

In order to lock the end connector 22 of the flexible cable 12 in the housing 14, a latch member 78 is provided and is constructed similarly to the latch member 28 which is formed of flat spring stock. The latch member 78 includes legs 80 and 82 that form part of a U configuration, the end 20 of the flexible cable 14 being fixed to the closed end of the U of the latch member 78. The opposite end of the latch member 78 is provided with spaced jaws 84 and 86 having arcuate grooves formed therein that are adapted to receive the neck portion 26 of the end connector 22 therebetween, thereby securing the head 24 therebetween in the locked position thereof. A lug 88 is struck out of the leg 82 of the latch member 78 and is positioned so as to be aligned with a notch formed in a key that is inserted in the slot 54 of the cylinder 46. The construction illustrated in FIGS. 6–12 differs from that described above in FIGS. 1–5 primarily in that a combination member 90 is provided and is secured in fixed relation within the housing 14. The combination member 90, which may be molded of any suitable plastic material, is formed with projecting ears 92 that are received in appropriate openings 93 formed in the housing portions 38 and 40. Formed on the face indicated at 94 of the combination member 90 that is located adjacent to the cylinder member 46 are a plurality of projections 96 that define notches therebetween. The projections 96 may be formed in any suitable spaced relation and will correspond to an acceptable key that is not inserted in the slot 54 of the cylinder 46. Thus, the projections 96 and the notches formed therebetween will define the face of the key that will be acceptable for use with the lock unit.

In use, an acceptable key is inserted within the slot 54 of the cylinder 46 and is pushed inwardly thereof to the limit for engagement with the spring 76 thereby releasing the cylinder 46 for rotation. Upon rotating movement of the key and cylinder 46, the cylinder 46 will be moved to the position illustrated in FIG. 12 for engagement of the web 59 with the legs 80 and 82 of the latch member 78. This web 59 forces the jaws 84 and 86 of the latch member apart for release of the end connector 22. It will be noted that the lug 88 formed on the leg 82 is received in a notch 98 formed in the web 52 when the cylinder 46 is in the unlocked position thereof, as illustrated in FIG. 12. It is apparent that the slot 98 must be provided in the web 52 so that the cylinder 46 can be moved to the unlocking position. As previously described, the key that is inserted into the cylinder 46 is also notched for accommodating the lug 88 when the key is rotated with the cylinder 46.

As further illustrated in FIG. 13, any number of combination members indicated at 100 is illustrated and includes a plurality of projections 102 that are disposed in spaced relation to define notches 103 and are formed in vertical alignment with appropriate projections 104 and notches formed in an acceptable key. The selected combination member will be secured in the housing 14 in the place of the combination member 90 that is illustrated in FIG. 9. Another combination member indicated at 104 in FIG. 13 having projections 105 and notches 107 formed in vertical alignment may also be employed in the housing 14 in the manner as just described. It is understood that any suitable means may be provided for securing either the combination member 100 or 104 within the housing 14 of the flexible shackle lock.

Referring now to FIG. 14, a still further modified form of the invention is illustrated wherein the flexible shackle lock is used as an electrical interlock. In this connection, the housing 14 is also formed with the housing portions 38 and 40, but the flexible cable indicated at 106 is that is provided includes leads 108 and 110 extending therethrough, as is normally found in electrical cable. Cable 106 terminates in an end connector 112 to which the head 114 is secured. An electrical cable 116 that is to be interlocked to the electrical cable 106 includes leads 118 and 120 and is permanently fixed in position within the housing 14, the lead 118 being joined to a terminal 122, and the lead 120 being joined to a terminal 124. The terminals 122 and 124 are mounted in fixed position within the housing 14 adjacent to the end in which the cable 106 is inserted. Located within the housing 14 and locked therein by suitable posts 126 and 128 is a U-shaped latch member generally indicated at 130. The latch member includes jaws 132 and 134 that are adapted to receive the end connector 112 therewith. A cylinder generally indicated at 46 and a combination member generally indicated at 90 are located within the housing 14 illustrated in FIG. 14 and are constructed substantially identical to the similar units described above.

In use, the cable 106 is inserted within the housing 14, and when in place, the head 114 projects behind the jaws 132 for locking the end connector 112 in place. In this position, the terminals 122 and 124 are located in electrical communication with the terminals 136 and 138 that are fixed to the electrical leads 118 and 120, respectively, of the cable 106. Thus, the terminals 136 and 138 are disposed in electrical communication with the terminals 122 and 124 respectively; when the cable 106 is located in the locked position thereof so as to electrically interconnect the cable 106 and 116. When it is desired to break the electrical interlock between the cables 106 and 116, an acceptable key is inserted within the slot of the cylinder 46 and rotated therewith. The jaws 132, 134 are forced apart to release the end connector 112, and the cable 106 is then withdrawn from the housing 114.

While there is shown and described herein certain specific structure embodying the invention, it will be manifest to those skilled in the art that various modifications and rearrangements of the parts may be made without departing from the spirit and scope of the underlying inventive concept and that the same is not limited to the particular forms herein shown and described except insofar as indicated by the scope of the appended claims.

What is claimed is:
1. In a flexible shackle lock, a housing, an elongated flexible cable, one end of which extends into said housing and is fixed therein, a latch member located in said housing and receiving the other end of said cable for locating the other end of said cable in a locked position, a cylinder rotatably mounted in said housing and having a key slot formed therein into which an acceptable externally applied key is adapted to be inserted for rotating said cylinder, means for restricting rotation of an unacceptable key that is inserted in said cylinder, said cylinder including means for engaging said latch member when said cylinder is rotated by the acceptable key, whereby the other end of said cable is released from said latch member for removal from said housing, said restricting means including at least one stop element that is joined to said latch member, said stop element being located in alignment with a groove in an edge of the acceptable key when the acceptable key is inserted in said key slot and rotated with said cylinder wherein further rotation of said shackle cylinder is permitted for releasing the other end of said cable from engagement with said latch member.
2. In a flexible shackle lock, a housing, an elongated flexible cable, one end of which extends into said housing and is fixed therein, a latch member located in said housing and receiving the other end of said cable for locating the other end of said cable in a locked position, a cylinder rotatably mounted in said housing and having a key slot formed therein into which an acceptable externally applied key is adapted to be inserted for rotating said cylinder, means for restricting rotation of an unacceptable key that is inserted in said cylinder, said cylinder including means for engaging said latch member when said cylinder is rotated by the acceptable key, whereby the other end of said cable is released from said latch member for withdrawal from said housing, said restricting means including a combination member that is secured in said body portion and having a face on which one or more projections are formed, said projections being spaced in accordance with the design of the acceptable key that is insertable in said key slot so as to permit rotation of said acceptable key and cylinder.

3. In a flexible shackle lock, a housing, an elongated flexible cable, one end of which extends into said housing and is fixed therein, a latch member located in said housing and receiving the other end of said cable for locating the other end of said cable in a locked position, a cylinder rotatably mounted in said housing and having a key slot formed therein into which an acceptable externally applied key is adapted to be inserted for rotating said cylinder, means for restricting rotation of an unacceptable key that is inserted in said cylinder, said cylinder including means for engaging said latch member when said cylinder is rotated by the acceptable key, whereby the other end of said cable is released from said latch member for withdrawal from said housing, the engaging means of said cylinder being defined by a cam surface that is formed thereon, and said latch member including opposed jaws that are normally closed around said other end of said cable, said cable in said housing, said cam surface being engageable with said latch element when said cylinder is rotated by the acceptable key to separate said jaws for releasing said other end of said cable from engagement therewith.

4. In a flexible shackle lock as set forth in claim 3, said restricting means including a stop element that is insertable to said latch member and projects outwardly therefrom, said stop element preventing rotation of an unacceptable key that is inserted into said key slot, but being located in alignment with a groove formed in the acceptable key, thereby permitting rotation of said acceptable key when it is inserted into said key slot and rotated with said cylinder.

5. In a flexible shackle lock as set forth in claim 3, said restricting means including a combination member that is mounted in said body portion and that has a face formed thereon on which a plurality of notches and projections are formed in spaced relation, said notches and projections being spaced in accordance with the design of the acceptable key that is insertable in said key slot so as to permit rotation of said key and cylinder.

6. In a flexible shackle lock as set forth in claim 3, a spring catch located in said housing adjacent to the inner end of said cylinder, a shoulder formed on the inner end of said cylinder and normally receiving said spring catch thereagainst for preventing rotation of said cylinder, said spring catch communicating with the key slot in said cylinder and being movable by the key that is inserted in said key slot out of engagement with said shoulder to release said cylinder for rotation by said key.

7. In a flexible shackle lock, a housing, an elongated flexible cable, one end of which extends into said housing and is fixed therein, a latch member located in said housing and receiving the other end of said cable for locating the other end of said cable in a locked position, a cylinder rotatably mounted in said housing and having a key slot formed therein into which an acceptable externally applied key is adapted to be inserted for rotating said cylinder, means for restricting rotation of an unacceptable key that is inserted in said cylinder, said cylinder including means for engaging said latch member when said cylinder is rotated by the acceptable key, whereby the other end of said cable is released from said latch member for withdrawal from said housing, said latch member including opposed arms that are joined together at the end to which the cable is secured, a jaw joined to the free end of each arm and cooperating with the opposed jaw to engage the other end of said cable for locking it in said housing.

8. In a flexible shackle lock as set forth in claim 7, said restricting means including a locking lug joined to each of said arms and disposed in adjacent relation with respect to said cylinder, said locking lugs restricting movement of the unacceptable key that is inserted in said cylinder but being aligned with corresponding grooves formed in the acceptable key to permit rotation thereof with said cylinder.

9. In a flexible shackle lock as set forth in claim 7, said restricting means including a combination member that is fixed in said housing adjacent to said cylinder and having an edge thereof formed with a plurality of projections and notches that correspond in location to the projections and notches formed in the acceptable key, wherein when said acceptable key is inserted into said cylinder and rotated therewith, the notches in said combination member receive the projections formed on the key and the projections formed on said combination member project into the notches located in said key.

10. In a flexible shackle lock, a housing, an elongated flexible cable, one end of which extends into said housing and is fixed therein, a latch member located in said housing and receiving the other end of said cable for locating the other end of said cable in a locked position, a cylinder rotatably mounted in said housing and having a key slot formed therein into which an acceptable externally applied key is adapted to be inserted for rotating said cylinder, means for restricting rotation of an unacceptable key that is inserted in said cylinder, said cylinder including means for engaging said latch member when said cylinder is rotated by the acceptable key, whereby the other end of said cable is released from said latch member for withdrawal from said housing, said cable having electrical conductor leads extending therethrough, spaced terminals located in said housing and being electrically interconnected to the leads of the end of the cable that is fixed in said housing, the other end of said cable having terminals joined thereto that communicate with the leads extending through said cable and being movable into electrical contact with the terminals in said housing when the other end of said cable is locked in said housing, thereby establishing electrical communication between the ends of said cable.

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