United States Patent

Kerr

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[54] KEEPER LOCK FOR A SEPARABLE FASTENER FOR A MONEY BAG OR THE LIKE

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[73] Assignee: **Chicago Lock Co.**, Chicago, Ill.

[22] Filed: **Dec. 8, 1970**

[21] Appl. No.: **96,007**

[52] **U.S. Cl.** .....**70/68**, 24/205.11 R, 70/386

[51] **Int. Cl.**.....**E05b 65/32**

[58] **Field of Search** .....70/32, 33, 68, 181, 38 C, 67, 70/69, 17, 19; 24/205.11 R, 205.11 L

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[57] **ABSTRACT**

A key-operated keeper lock adapted for use in connection with a slide fastener and in which a lock housing carries a fixed anvil which underlies the slidable lacing element of the slide fastener, and a rotatable jaw member closely overlies said slidable lacing element in the locked condition of the lock. The jaw member is of the pop-up type, and when it is raised from a position of close proximity to the slidable lacing element, it may be swung to one side to expose the lacing element for manipulative purposes. An axial tumbler type lock assembly disposed alongside the jaw member operates through the medium of a detent ball to release the jaw member for pop-up purposes.

8 Claims, 13 Drawing Figures

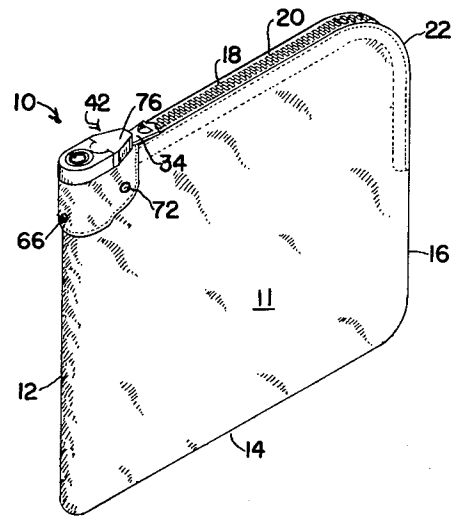


FIG. 1

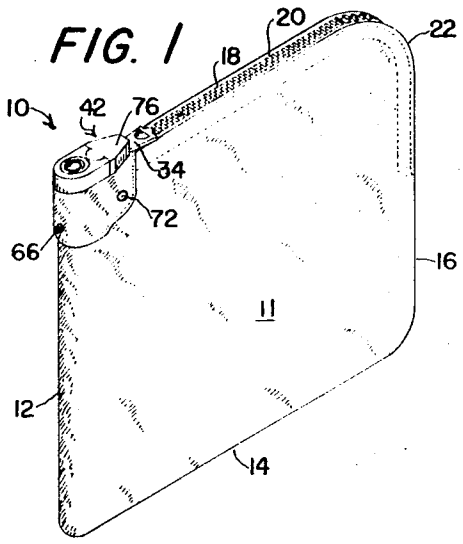


FIG. 2

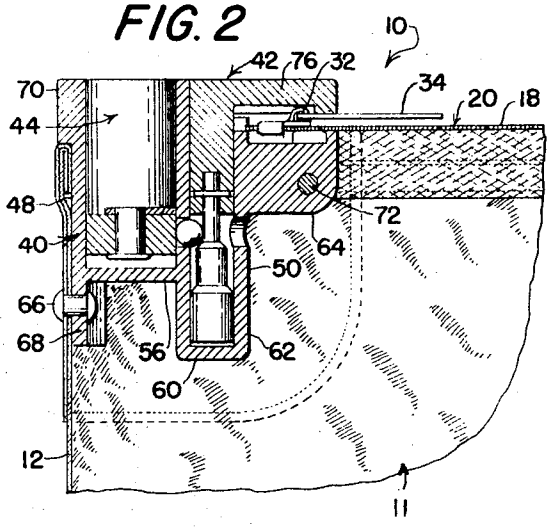


FIG. 3

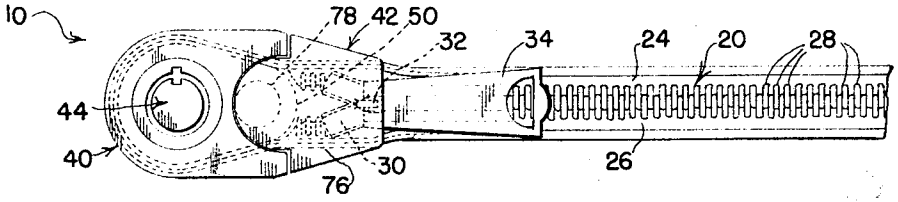


FIG. 4

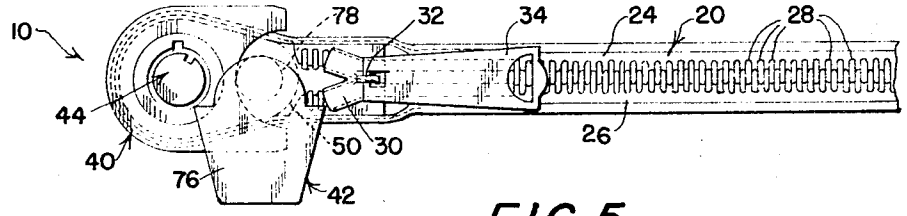


FIG. 5

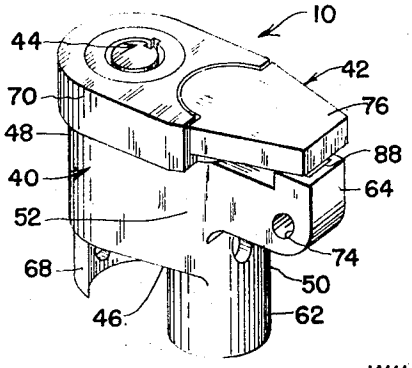
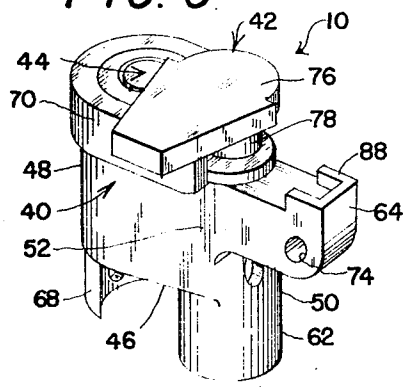


FIG. 6



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FIG. 7

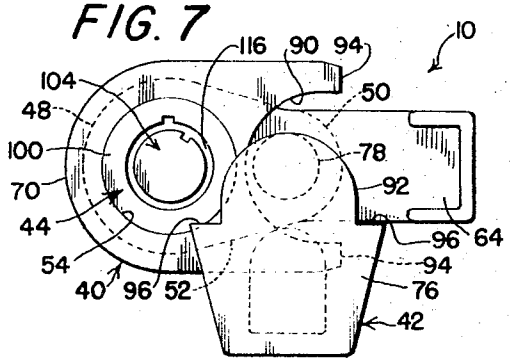


FIG. 8

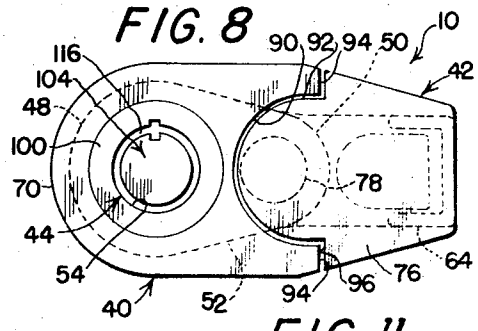


FIG. 11

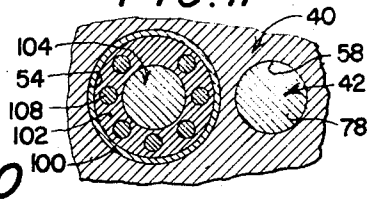


FIG. 9

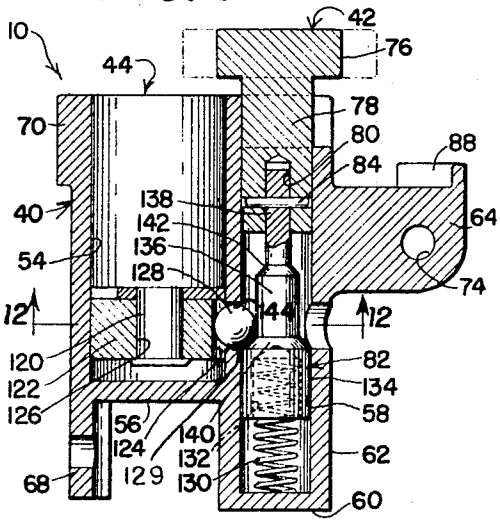


FIG. 10

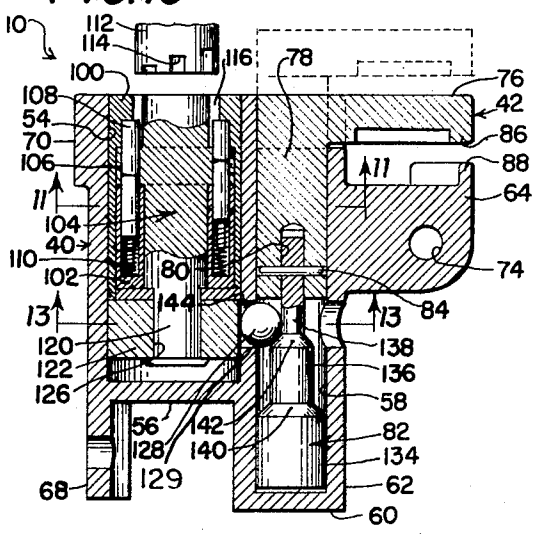


FIG. 12

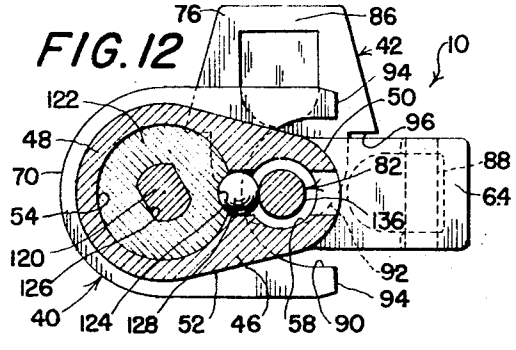
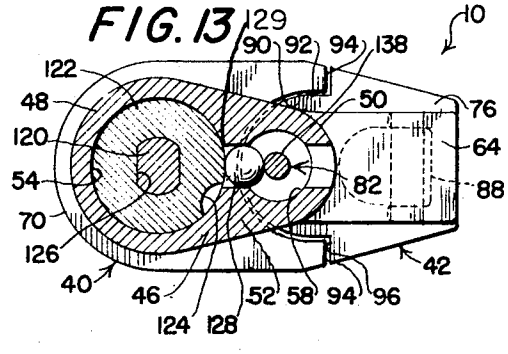


FIG. 13



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KEEPER LOCK FOR A SEPARABLE FASTENER FOR A MONEY BAG OR THE LIKE

The present invention relates generally to a keeper lock for a slide fastener and pertains particularly to a keeper lock of the general type which is shown and described in my copending U.S. Pat. application Ser. No. 28,656, filed on Apr. 15, 1970, and now U.S. Pat. No. 3,580,016 and entitled "Keeper Lock for a Slide Fastener," the principal object of the invention being to provide a keeper lock which is an improvement upon, and possesses certain advantages over, the lock of such application.

Briefly, the keeper lock of aforementioned U.S. Pat. application Ser. No. 28,656 is designed for use in connection with the slide fastener of a flexible money bag and consists of three principal parts, namely, a lock housing which presents an anvil that is adapted to underlie the lacing element of the slide fastener of the money bag, a rotatable jaw member which is adapted selectively to overlie and cover or to uncover such lacing element, and a key-operated tumbler lock assembly by means of which turning of the rotatable jaw member may be prevented. These three parts are coaxial and concentric, the lock housing constituting the outer member, the handle constituting the intermediate member, and the tumbler lock assembly constituting the inner member.

The present keeper lock differs appreciably from the keeper lock of my copending patent application, above referred to, and among the principal differences is the fact that the jaw member and the key-operated lock assembly, instead of being concentric, are laterally displaced with respect to each other, each being slidable vertically in the anvil-supporting lock housing in side-by-side relationship, while novel coacting cam instrumentalities, including a ball-type detent means, function under the control of the key-operated lock assembly to maintain the jaw member and the anvil in their confining relationship with respect to the lacing element of the slide fastener when such assembly is locked, and to release the jaw member for movement away from the anvil when the assembly is unlocked. A further difference resides in the fact that the key-operated lock assembly, instead of being of the radial tumbler type, is of the axial tumbler type, this being a preferred form of lock assembly which functionally would be difficult, if not impossible satisfactorily to embody in a keeper lock where the principal parts as outlined above are concentric.

The provision of a keeper lock for a slide fastener such as has briefly been outlined above constitutes the principal object of the present invention. Convenience of arrangement of parts, ruggedness and durability, ease of manipulation, and particularly a minimizing of the possibility of prying the jaw member away from the anvil or of withdrawing the lacing element of the slide fastener from between the jaw member and anvil, are further desirable features which have been borne in mind in the production and development of the present invention.

The invention consists in several novel features which are hereinafter set forth and are more particularly defined by the claims at the conclusion hereof.

In the accompanying two sheets of drawings forming a part of this specification or disclosure, one illustrative embodiment of the invention is shown.

In these drawings:

FIG. 1 is a perspective view of a flexible money bag, showing the keeper lock of the present invention applied thereto and in its locked condition;

FIG. 2 is an enlarged fragmentary section view taken substantially centrally and vertically through the lock-containing corner region of the money bag, the lock cylinder of the improved keeper lock being shown in elevation in the interests of clarity;

FIG. 3 is a top plan view of the structure which is shown in FIG. 2, the keeper lock being shown in its locked condition;

FIG. 4 is a top plan view similar to FIG. 3 but showing the keeper lock in its unlocked condition with the rotatable jaw member swung to one side;

FIG. 5 is a perspective view of the keeper lock per se, such lock being shown in its locked condition;

FIG. 6 is a perspective view similar to FIG. 5 but showing the keeper lock in its unlocked condition with the jaw member swung to one side;

FIG. 7 is a top plan view of the structure which is shown in FIG. 6;

FIG. 8 is a top plan view of the structure which is shown in FIG. 5;

FIG. 9 is a vertical longitudinal sectional view of the improved keeper lock;

FIG. 10 is a similar sectional view but showing the keeper lock in its locked condition;

FIG. 11 is a horizontal sectional view taken on the line 11—11 of FIG. 10;

FIG. 12 is a horizontal sectional view taken on the line 12—12 of FIG. 9; and

FIG. 13 is a horizontal sectional view taken on the line 13—13 of FIG. 10.

Referring now to the drawings in detail and in particular to FIGS. 1 and 2, the improved keeper lock 10 of the present invention is illustrated for exemplary purposes as being applied to a flexible money bag 11 of the type which is generally used by a messenger when transporting the day's receipts of a business to a bank. The money bag 11 is in the form of an envelope-like container consisting of a single generally rectangular sheet which is formed of canvas or other strong material and is folded upon itself and stitched in the usual manner of construction of such a bag in order to provide a two-sided container having a folded side edge 12, a fully stitched bottom edge 14 and a partially stitched side edge 16. The upper edge 18 and a portion of the side edge 16 of the money bag 11 remain unstitched in order to provide an entrance opening which is adapted to be closed by a conventional slide fastener assembly 20. The adjacent edges 16 and 18 merge with each other on a rounded bias as indicated at 22, the slide fastener assembly 20 arching or curving around such rounded bias, thus affording a wide entrance opening when the two sides of the container are spread apart after the slide fastener assembly 20 has been manipulated into its open or released position.

The slide fastener assembly 20 is of the conventional "zipper" type and includes a pair of cloth attachment strips 24 and 26 (see FIGS. 3 and 4), each strip carrying the usual longitudinal series of spaced locking fingers 28. The locking fingers on the two strips 24 and 26 are designed for interlocking engagement with each other under the control of a slidable lacing element 30 which has an upstanding bail 32, to which there is attached a pivoted pull tab 34.

In the operation of the slide fastener assembly 20, when the lacing element 30 is slid in one direction along the upper edge 18 of the money bag 11 as shown in FIG. 1, the locking fingers 28 on the attachment strips 24 and 26 are progressively brought together and caused to become interlaced so as to close the entrance opening of the bag. When the lacing element 30 is slid in the opposite direction, the locking fingers on the two strips are progressively unlaced and separated as is well known in the art, thus opening the bag and affording access to the interior thereof.

As shown in FIGS. 1 to 4, inclusive, the slide fastener assembly 20 terminates a short distance inwards of the folded side edge 12, thus leaving a void at the upper left-hand corner of the bag 11 as shown in FIGS. 1 and 2, the void serving to receive therein the keeper lock 10 of the present invention.

Referring now particularly to FIGS. 5 to 10, inclusive, the keeper lock 10 of the present invention is comprised of three principal parts, namely, a lock housing 40, a rotatable locking jaw member 42, and an axial tumbler lock assembly 44, together with a number of interacting elements and their adjuncts by means of which a movable jaw proper which is associated with the jaw member 42 may be secured in a locking position with respect to a fixed jaw proper or anvil in associated relation with the housing 40, or released from its locking position, all in a manner that will be made clear presently.

The lock housing 40 of the keeper lock 10 is in the form of a machined die casting which is provided with a medial section 46. The latter is of tapered or tear drop shape in cross section and presents a curved rear end portion 48 of large radius of curvature, a curved front end portion 50 of small radius of curvature, and sloping flat sides 52. A vertical socket 54 (see FIGS. 9 and 10) of large diameter is provided or formed in the large rear end portion of the medial section 46 of the lock housing 40 and has associated with it a circular bottom wall 56. A second vertical socket 58 of smaller diameter is provided in the small front end portion 50 of said medial section 46 and has associated with it a circular bottom wall 60, the latter serving to close the lower end of a short downwardly extending tubular extension 62 which projects below the level of the bottom wall 56. A fixed jaw proper or anvil 64 projects forwardly from the small front end portion of the medial section 46 of the lock housing 40 and is designed for cooperation with the aforementioned rotatable locking jaw member 42.

The large rear end portion 48 of the medial section 46 of the lock housing 40 fits within the aforementioned void at the upper left-hand corner of the money bag 11 as shown in FIG. 1 and is anchored therein by means of a rivet 66 which passes through the fold of the bag and through a downward flange-like extension 68 which projects below the bottom wall 56. An outwardly extending rim flange 70 on the upper end section of the housing 40 overlies the folded edge region of the bag 11. The aforementioned anvil 64 fits between the two cloth sides of the bag 11 and is adapted to underlie the pull tab 34 when the lacing element 30 of the slide fastener assembly 20 is in its fully closed condition. A second rivet 72 passes through both sides of the bag 11 and also through a transverse bore 74 (see FIGS. 5 and 6) in the anvil 64, such rivet, in combination with the rivet 66, serving securely to anchor the keeper lock 10 within the aforementioned void.

The rotatable locking jaw member 42 consists of a jaw proper in the form of a keeper flange 76 from which there depends a cylindrical jaw stem 78, the latter being provided with a vertically extending open bottom socket 80 (see FIG. 9) which receives the upper end of a vertically extending, generally cylindrical locking cam 82, the latter being vertically slidable in the socket 58. A transverse pin 84 serves to secure the locking cam 82 and the jaw member 42 to each other for vertical shifting movement in unison, while at the same time permitting angular turning movement thereof about a common vertical axis. The locking cam 82 thus constitutes an extension of the jaw stem 78.

As best illustrated in FIGS. 7 to 10, inclusive, the rotatable locking jaw member 42 is of the "pop-up" type and is capable of assuming two extreme positions with respect to the lock housing 40, as well as an intermediate position. In a first and locked position, the jaw stem 78 is fully received within the socket 58 in the lock housing 40 with the keeper flange 76 closely overlying the anvil 64 as shown in FIGS. 2, 3, 9 and 11. When the jaw member 42 is in this position, a depending, peripheral, rectangular rib structure 86 on the keeper flange 76 cooperates with a similar upstanding rib structure 88 on the anvil 64 (see FIG. 10) in confining the slidable lacing element 30, maintaining the same in a seated position on the upper surface of the anvil 64, and precluding access to the pull tab 34. In a second and intermediate position, the rotatable locking jaw member 42 assumes the position wherein it is shown in dotted lines in FIG. 10, and is free to be rotated so as to withdraw the keeper flange 76 from its tab-overlying position.

In the third and unlocked position in which it is shown in FIGS. 4, 6, 7, 9 and 12, the rotatable jaw member 42 is rotated from the dotted line position of FIG. 10, through an angle of 90° so that the pull tab 34 is completely uncovered and may be manipulated for bag-opening purposes.

It is to be noted at this point that, as best illustrated in FIGS. 5, 7 and 8, when the jaw member 42 is in the locked position, the general plane of the keeper flange 76 coincides with the general plane of the rim flange 70 and the forward region of such rim flange is formed with a semi-circular recess or relief area 90 into which projects a conformably shaped rear edge region 92 which is provided on the keeper flange 76. Opposed cooperating abutment shoulders 94 and 96 on the rim flange 70 and the keeper flange 76 prevent lateral swinging movement of the latter in the lowered locked position of the jaw member 42. When the jaw member is raised to its intermediate position as shown in dotted lines in FIG. 10, these abutment shoulders 94 and 96 are out of register with each other so that the jaw member 42 may be swung laterally 90° to its unlocked position.

As will be described in detail presently, the locking cam 82 cooperates with the axial tumbler lock assembly 44 to maintain the locking jaw member 42 in its depressed locking position when the lock assembly 44 is in its locked condition and to release the locking cam so that it may pop up to its intermediate position when the lock assembly 44 is in its unlocked condition. The lock assembly 44 is purely conventional and no claim is made herein to any novelty therein. This assembly 44 is of the type which is manufactured and sold by Chicago Lock Company of Chicago, Illinois under the trade name "ACE," and, therefore, it will be only briefly described herein.

The axial tumbler lock assembly 44 embodies an outer lock barrel 100 (see FIG. 10) within which there is disposed a non-rotatable or fixed, sleeve-like plug part 102. A lock shaft 104 is rotatable within the fixed plug part 102 and is provided with a medially disposed enlarged body potion 106 which overlies the upper rim of said fixed plug part 102. Circumferentially disposed, axially extending split pin tumblers 108 slide in respective axial bores which are formed respectively in the plug part 102 and the enlarged body portion 106 of the lock shaft 104, and they are pressed or biased upwards by helical compression springs 110 so that when the tumbler splits are in register with the interfacial plane between the body portion 106 and the fixed plug part 102, the lock shaft may be rotated under the control of a proper key such as fragmentarily shown in FIG. 10 and designated by the reference numeral 112. The effective portion of the key 112 is tubular and is provided with a series of downwardly facing shoulders 114 which, when the key is introduced into the annulus or keyway 116 which exists between the lock shaft 104 and the outer lock barrel 100, effects the necessary releasing of the lock shaft for turning movement as is customary in connection with conventional "ACE" type axial tumbler locks.

The lower end of the lock shaft 104 is provided with a depending non-circlar stem 120 on which there is mounted a relatively thick cam plate 122 having a small cam recess 124 in the periphery thereof. Said cam plate 122 is provided with an axial opening 126 (see FIG. 12) which is conformable in shape to that of the non-circular stem 120, said stem projecting through the opening 126 so that the cam plate 122 is constrained to rotate with the lock shaft 104. The cam plate 122 and the recess 124 are designed for cooperation with a detent ball 128 which is confined in a circular opening 129 that extends between and is in communication with the two sockets 54 and 58 in a manner and for a purpose that will be made clear presently.

The locking cam 82 is yieldingly biased within the socket 58 in an upward direction by means of a helical compression spring 130 which bears at its lower end against the bottom wall 60 of the socket 58 and has its upper end projecting into a downwardly facing socket pilot socket 132 in the lower portion of the locking cam. Said locking cam 82 is of stepped configuration and is provided with a relatively large lower section 134, a reduced medial section 136 and a further reduced upper section 138, the latter being secured to the rotatable jaw member 42 by the aforementioned transverse pin 84. Frusto-conical juncture regions establish upwardly facing shoulders 140 and 142 between the lower and medial sections 134 and 136 and the medial and upper sections 136 and 138, respectively. When the locking cam 82 and its associated rotatable jaw member 42 are in their lowered locking position as shown in FIG. 10, the detent ball 128 bears against the upper section 138 of the locking cam 82 and is at least partially supported on the frusto-conical shoulder 142. When this

locking cam and the jaw member are in their raised position, regardless of whether the keeper flange **76** is in its intermediate position as shown in dotted lines in FIG. **10**, or in its out-of-the-way position as shown in FIG. **12**, the detent ball **128** bears against the lower section **134** of the locking cam **82** and is at least partially supported on the frusto-conical shoulder **140**.

In the operation of the herein described keeper lock **10**, when it is desired to close the money bag **11** and prevent unauthorized access to the interior thereof, the lacing element **30** will be slid to the left as viewed in FIGS. **1** to **3**, inclusive, as far as it is capable of moving so that all of the locking fingers **28** will become interlaced and so that the lacing element **30** will assume a position in close proximity to the forward end of the lock housing **40** and overlying the anvil **64**. It will be assumed, of course, that at this time the keeper lock **10** has been unlocked and that the elevated movable jaw member **42** has been swung to its out-of-the-way position as shown in FIGS. **4**, **6** and **7**. It will also be understood that at this time the key **112** will be in position within the axial tumbler lock **44**. As soon as the slide fastener assembly **20** has thus been brought to its fully laced position, the entire slidable lacing element **30**, together with the proximal end of the pull tab **34**, will lie within the confines of the upstanding rib structure **88**. It will be further understood that at this time the axial tumbler lock assembly **44** will have been manipulated under the control of the key **112** so as to unlock such assembly by rotating the lock shaft **104** to such an extent that the recess **124** in the peripheral portion of the cam plate **122** is in register with and receives the detent ball **128** as shown in FIGS. **9** and **12**, said detent ball **128** bearing against the frusto-conical shoulder **140** so as to prevent dislodgment of the locking cam **82** upwardly with respect to the socket **58**. With the lacing element **30** of the slide fastener assembly **20** thus in an overlying position with respect to the anvil **64**, the movable jaw member **42** will be manually rotated in a counterclockwise direction as viewed in FIGS. **4** and **7** in order to bring the rotatable jaw proper **76** into vertical register with the anvil **64** and in overlying relation with respect to the pull tab **34**. Such turning movement or rotation of the jaw member **42** will not affect the disposition of any of the internal parts which are associated with the lock housing **40** and the ball **128** will ride freely around the cylindrical outer surface of the reduced medial section **136** of the locking cam **82**. Thereafter, the jaw member **42** will be pushed downwards so that the jaw stem **78** will slide within the socket **58** and the locking cam **82** will move downwardly to cause the detent ball **128** to ride longitudinally along the reduced medial section **136** of the locking cam **82** and then across the frusto-conical shoulder **142** and into tangential engagement with the upper reduced section **138** of said locking cam. After this operation or step, the key **112** will be operated and the axial tumbler lock assembly **44** actuated to effect locking thereof so that the ball will ride out of the recess **124** in the cam plate **122** and be positively held in its tangential relationship against the frusto-conical shoulder **142** and the reduced upper section **138** of the locking cam **82**. When the key **112** is withdrawn from the axial tumbler lock assembly **44**, the parts will assume the positions in which they are shown in full lines in FIG. **10** and also in FIGS. **1** and **2**, and the detent ball will prevent upward movement of the locking cam **82**, and, consequently, of the movable jaw member **42** and its associated keeper flange **76** which, at this time, will closely overlie the slidable lacing element and the proximal portion of the pull tab **34**, with the latter being confined between the anvil **64** and the keeper flange **76** and with the lacing element **30** being encompassed by the two rib structures **86** and **88**.

Opening of the locked money bag **11** is accomplished by the simple expedient of inserting the key **112** into the key-receiving annulus or keyway **116** and turning the lock shaft **104** until the recess **124** in the cam plate **122** registers radially with the detent ball **128**, at which time the upward force of the spring **130** in the socket **58** (see FIG. **10**) will cause the frusto-conical shoulder **142** to exert a camming action on the ball **128** and force the same into the recess **124** so that the medial cylindrical section **136** of the locking cam **82** may ride upwardly into contact with the ball and thus maintain the latter seated within the recess **124**. As soon as the frusto-conical shoulder **140** engages the detent ball **128**, further upward movement of the locking cam **82** is prevented and the movable jaw member **42** will assume its "popped up" position as shown in dotted lines in FIG. **10**. The keeper flange **76** will then be manually rotated through an angle of 90° in a clockwise direction as viewed in FIG. **7** so as completely to uncover the lacing element **30** of the slide fastener assembly **20** for manipulative purposes. The pull tab **34** is then accessible so that it may be raised from its horizontal position and the lacing element slide to the right as viewed in FIGS. **1** and **2**, thereby unlacing the locking fingers **28** of the slide fastener assembly **20** and opening the bag **11** as previously described.

The invention is not to be limited to the exact arrangement of parts shown in the accompanying drawings or described in this specification as various changes in the details of construction may be resorted to without departing from the spirit or scope of the invention. For example, whereas the locking cam **82** is shown and described herein as being separately formed from the jaw member **42**, it is within the purview of the invention to form this member integrally with the jaw stem **78**, in which case it will constitute an integral part of the jaw member **42**, while at the same time preserving its cam action. Therefore, only insofar as the invention is particularly pointed out in the accompanying claims is the same to be limited.

Having thus described the invention what I claim as new and desire to secure by letters patent is:

1. A keeper lock for securing the lacing element of a slide fastener, said lock comprising a lock housing presenting an anvil adapted to underlie said lacing element, said housing being formed with a pair of adjacent vertical sockets and an opening establishing communication therebetween, a movable jaw member having a stem received in one of said sockets and having a keeper flange thereon, said jaw member being capable of both angular turning and axial shifting movements so that it may assume a lowered and locked position with the keeper flange closely overlying the anvil and lacing element, an intermediate raised unlocked position with the keeper flange overlying but remote from the anvil, and a raised unlocked position with the keeper flange laterally removed from the anvil to expose the lacing element, spring means biasing said jaw member to its upper position, a key-operated lock assembly in the other socket and including a rotatable lock shaft, said stem having upper and lower shoulders thereon, and retractable detent means operable under the control of said lock shaft, projecting through said opening, and engageable with the upper shoulder to maintain the jaw member in its lowered and locked position and engageable with the lower shoulder to limit the upward movement of the jaw member.

2. A keeper lock as set forth in claim **1** and wherein said detent means comprises a cam disk on said lock shaft and having a peripheral recess therein, and a detent ball movably disposed in said opening and engageable with the periphery of the disk, said detent ball, when disposed within said recess, projecting into the path of movement of said lower shoulder, and when withdrawn from said recess, projecting into the path of said upper shoulder.

3. A keeper lock as set forth in claim **2** and wherein each shoulder is in the form of a frusto-conical annulus and the lower shoulder presents a larger base diameter than the base diameter of the upper shoulder.

4. A keeper lock as set forth in claim **3** and wherein said lock housing is formed with an upper rim flange which surrounds said other opening and which is provided with a semicircular relief area therein, the keeper flange is provided with a conformably shaped edge region, and the rim flange and keeper flange assume a substantially coplanar relationship when the movable jaw member is in its lowered and locked position and with said edge region projecting into and mating with the relief area.

5. A keeper lock as set forth in claim 4 and wherein said rim flange presents a first pair of abutment shoulders on opposite sides of said edge region and designed for engagement with said first pair of abutment shoulders to prevent rotation of the jaw member when the latter is in its lowered position.

6. A keeper lock as set forth in claim 5 and wherein said stem on the movable jaw member is comprised of two parts including a stem proper and a stem extension in the form of a locking cam on which said upper and lower frusto-conical shoulders are formed, and the locking stem is pivoted to the stem proper by a transverse pin which projects through the stem and its extension.

7. A keeper lock as set forth in claim 6 and wherein said locking cam is of stepped configuration and includes a lower enlarged cylindrical section, a reduced medial cylindrical section, and an upper further reduced cylindrical section, adjacent sections being provided with frusto-conical juncture regions which constitute said upwardly facing shoulders.

8. A keeper lock as set forth in claim 7 and wherein said stem on the jaw member is formed with a downwardly facing socket into which the upper reduced cylindrical section of the locking cam projects, and said transverse pin projects diametrically through said latter socket and cylindrical section.

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