Oct. 14, 1969 R. A. SEWELL 3,472,049

COMBINATION SHACKLE LOCK

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Fig. 1.

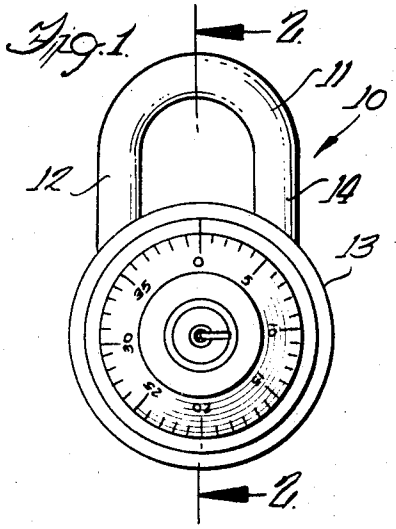


Fig. 3.

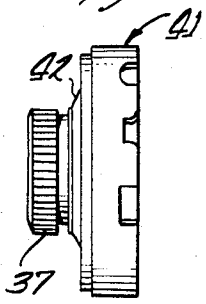


Fig. 4.

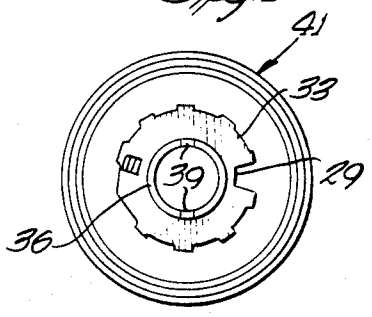


Fig. 20.

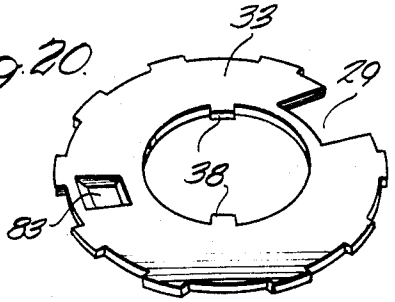


Fig. 2.

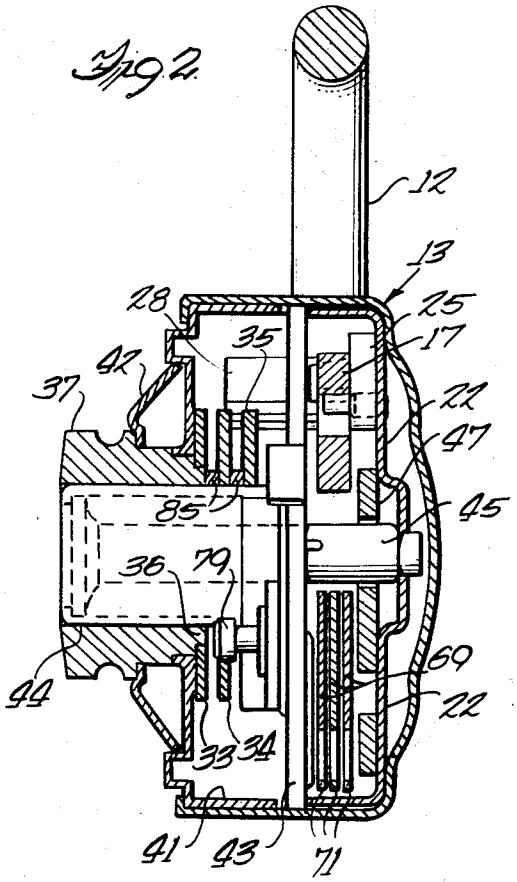


Fig. 21.

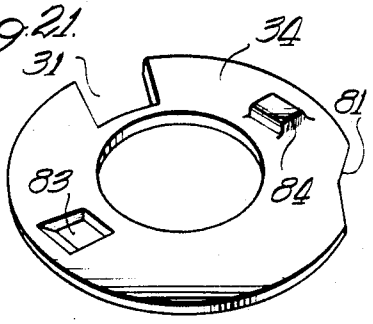
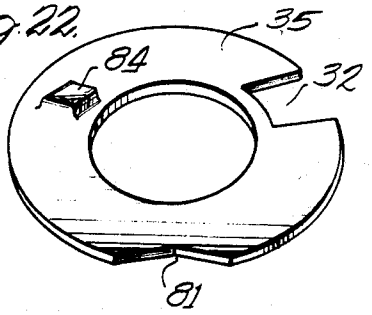


Fig. 22.



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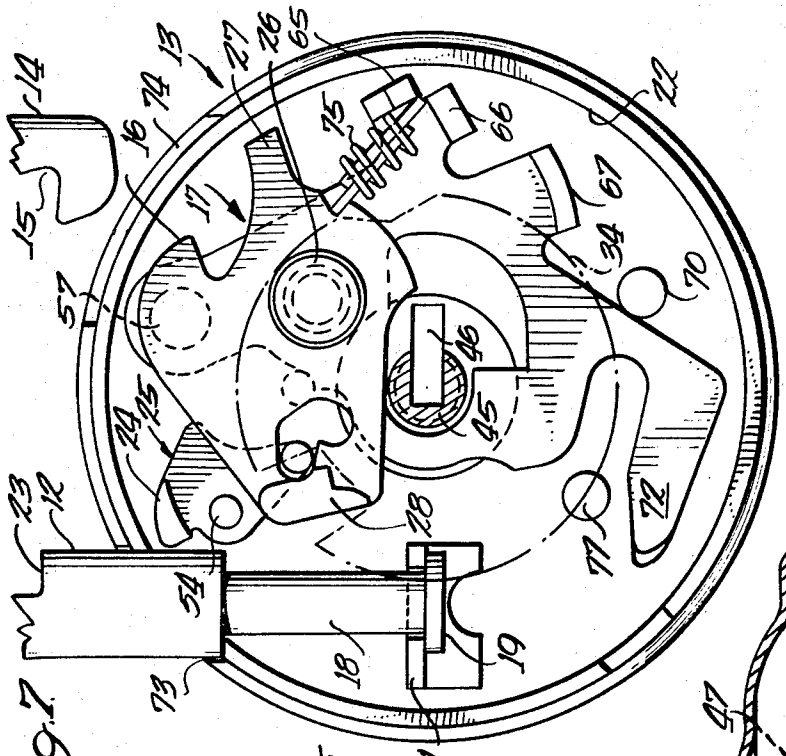


Fig. 7

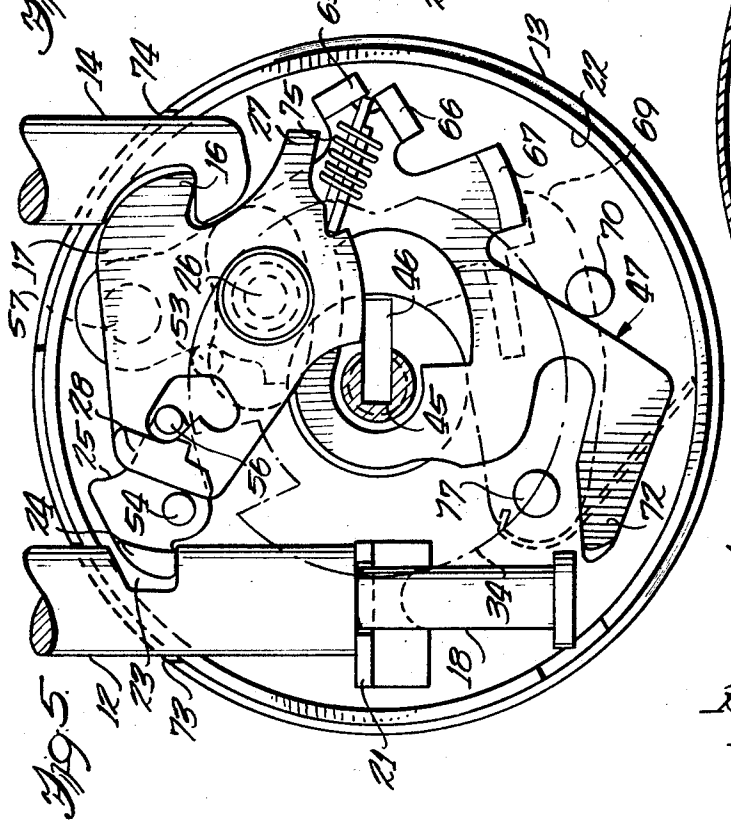


Fig. 5

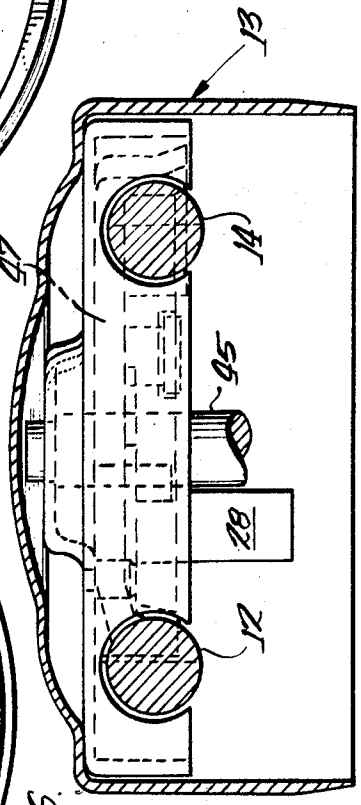


Fig. 6

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Fig. 8.

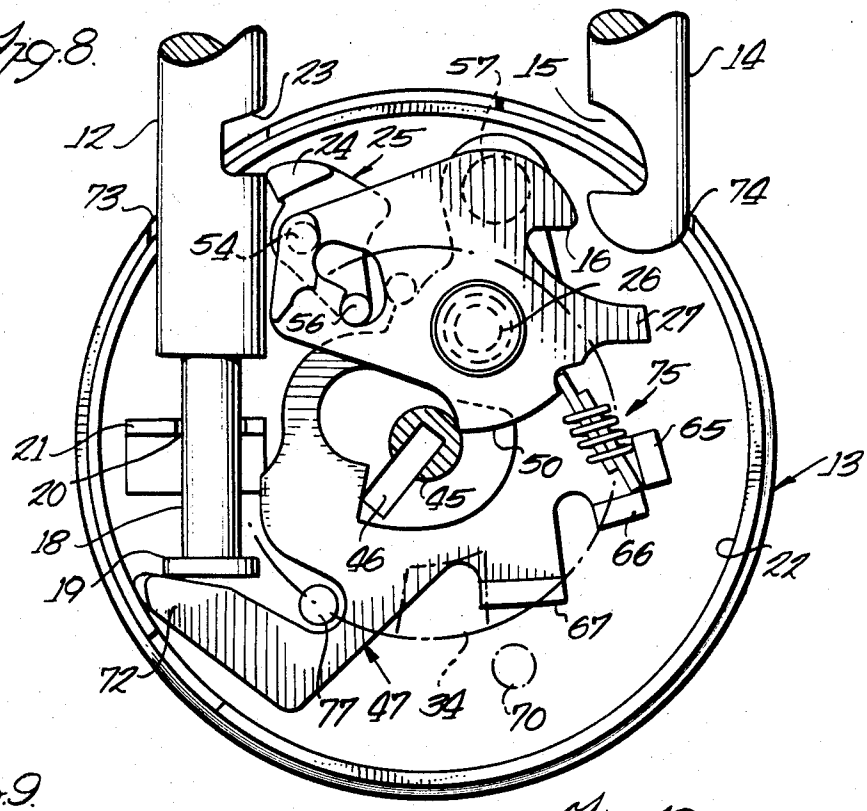


Fig. 9.

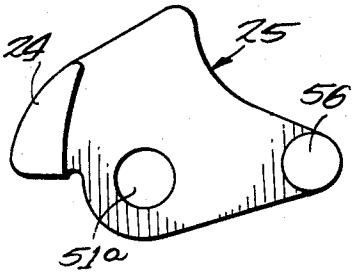


Fig. 10.

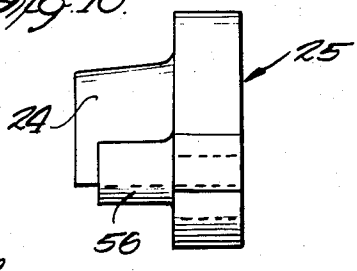


Fig. 11.

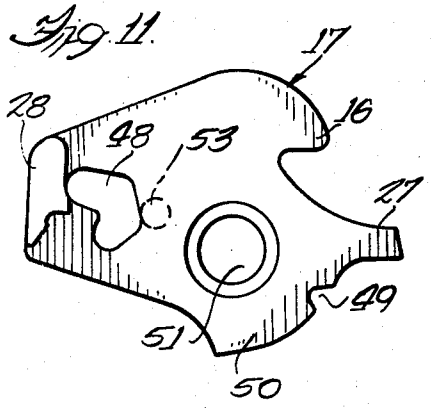
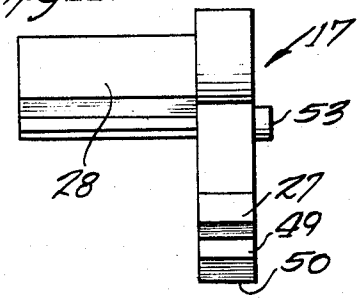


Fig. 12.



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COMBINATION SHACKLE LOCK

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Fig. 13

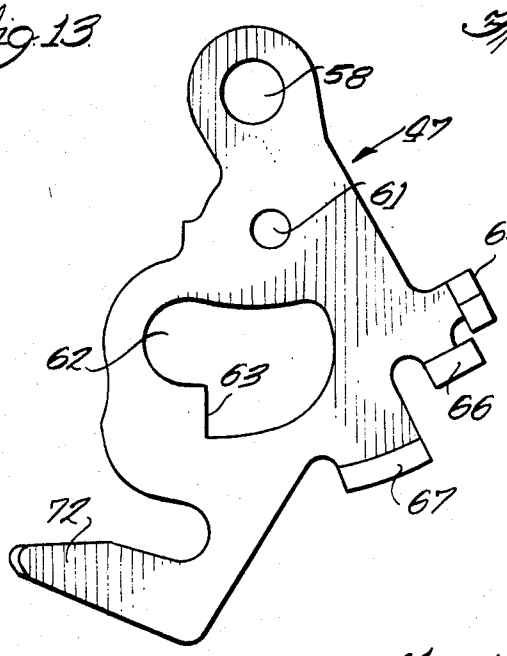


Fig. 14

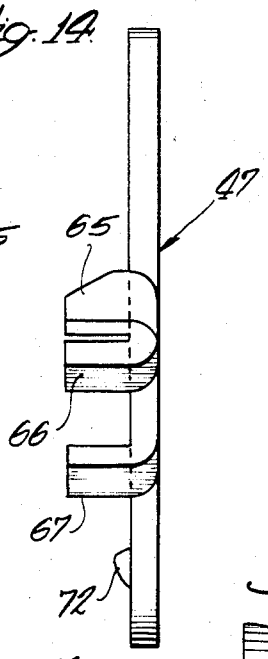


Fig. 15

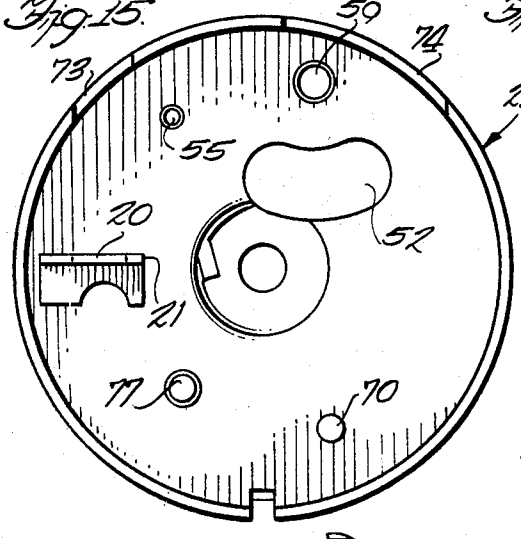


Fig. 16

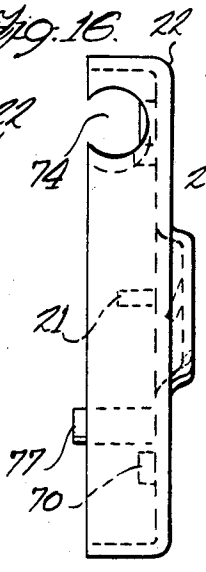


Fig. 17

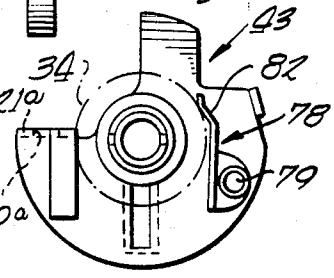


Fig. 18

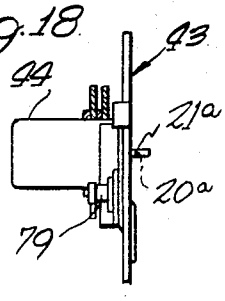
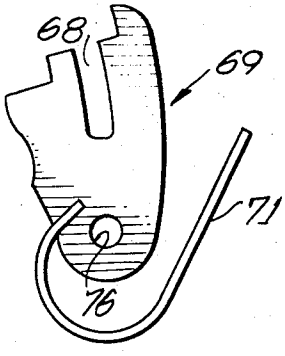


Fig. 19



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United States Patent Office 3,472,049 Patented Oct. 14, 1969

3,472,049

COMBINATION SHACKLE LOCK

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Filed Sept. 13, 1967, Ser. No. 667,440
Int. Cl. E05b 37/08, 37/22
U.S. Cl. 70—21 14 Claims

ABSTRACT OF THE DISCLOSURE

A combination or permutation shackle type lock in which release of the shackle is controlled ether by manipulating a knob, dial and permutation discs through a predetermined combination, or by means of a master key. The components of the locking mechanism include a lock bolt and an auxiliary bolt so constructed and related as to retain the shackle in locked position and to prevent accidental as well as intentional locking action or "lockout" when the shackle is released and withdrawn from the lock casing.

The present invention relates to an improved combination shackle lock of the snap-latching action type which is both permutation and master key controlled, and in which the components of the locking mechanism are so constructed and arranged whereby in their released condition and the shackle withdrawn, these components maintain a relationship whereby to prevent accidental as well as intentional locking action or lockout of the mechanism.

Another object of the present invention is the provision in a combination or permutation and key controlled lock assembly of a novel combination including a shackle, lock bolt, auxiliary bolt and floating bolt all constructed and arranged for operation in a novel manner in which the auxiliary bolt reinforces the locking action and prevents accidental or unintentional lockout.

The present invention further comprehends a novel combination lock mechanism including a lock bolt and an auxiliary bolt both dogging into the shackle when in locked position. To effect such locking action each leg of the shackle is provided with a notch, one of the notches receiving a dog on the lock bolt and the other receiving a dog on the auxiliary bolt. The auxiliary bolt and its coaction with the locking bolt, greatly reinforces the shackle against entry.

Another object of the present invention is the prosion of a key-controlled lock mechanism permitting removal of the key while the lock is opened and yet be able to lock without requiring use of the key.

A further object of the present invention is the provision of a novel combination lock assembly in which upon dialing of the proper combination of plural permutation discs the gates of the permutation discs are positioned to receive the fence post of the lock bolt, and when the shackle is released and withdrawn, the lock bolt and the auxiliary bolt are moved by the shackle about their pivot points to drive the fence post into the gates causing rotation of the discs sufficiently to disperse the combination.

Further objects, advantages and capabilities will hereinafter more fully appear and are inherently possessed thereby.

In the drawings:

FIGURE 1 is a view in front elevation of combination shackle lock in locked position.

FIG. 2 is an enlarged vertical cross sectional view taken on the line 2—2 of FIG. 1.

FIG. 3 is a side elevational view of the sub-assembly of the dial housing, dial and knob.

FIG. 4 is a rear elevational view of the sub-assembly of FIG. 3 and showing the locking disc affixed to the hub of the knob.

FIG. 5 is an enlarged front elevational view of the shackle housing, external lock casing and internal combination or permutation lock components within the shackle housing, the shackle shown in locked position.

FIG. 6 is a horizontal cross sectional view of the lock casing and shackle legs and showing the shackle housing and combination lock components in dotted outline.

FIG. 7 is a view similar to FIG. 5 but with the combination lock components and the shackle moved to unlocked position.

FIG. 8 is a view similar to FIG. 7 but showing the shackle being retracted from the locked to unlocked position.

FIG. 9 is a front elevational vew of the auxiliary bolt.

FIG. 10 is an end elevational view of the auxiliary bolt.

FIG. 11 is a front elevational view of the locking bolt.

FIG. 12 is an end elevational view of the locking bolt.

FIG. 13 is a front elevational view of the floating bolt.

FIG. 14 is an end elevational view of the floating bolt.

FIG. 15 is a front elevational view of the shackle housing.

FIG. 16 is a side elevational view of the shackle housing.

FIG. 17 is a front elevational view on a reduced scale of the bolt cap disposed between the dial housing and the shackle housing.

FIG. 18 is a side elevational view of the bolt cap of FIG. 17.

FIG. 19 is a front elevational view of one of the key tumblers.

FIG. 20 is an enlarged perspective view of the locking disc affixed to the dialing knob.

FIG. 21 is an enlarged perspective view of the upper combination or permutation disc.

FIG. 22 is an enlarged perspective view of the lower combination or permutation disc.

Referring more particularly to the disclosure in the drawings in which is shown an illustrative embodiment of the novel combination shackle lock assembly **10** having a substantially U-shaped sliding shackle **11** with a long leg **12** retained but reciprocal and rotatable in the lock casing **13** and a short leg **14** releasably received in the lock casing and provided with a notch **15** for receiving a dog or hook **16** on a lock bolt **17** when the shackle is moved to its lowered, locked position.

The long leg **12** of the shackle is permanently retained in the lock casing and adjacent its inner end formed with a reduced shank portion **18** and a head **19**, the reduced shank portion being slidably received in a recess **20** in an outwardly projecting flange **21** in a shackle housing **22** and in an aligned recess **20a** in a rearwardly projecting flange **21a** in a bolt cap **43**, these recessed flanges providing a hold-down and guide for movement of the leg **12** with the head retaining the end of this leg in the casing. This leg **12** is mounted for rotation or swivel movement in the casing when unlocked and open and provided with notch **23** adapted to receive a post or dog **24** on an auxiliary bolt **25**.

The lock bolt **17** is pivotally mounted upon a pivot pin **26** and provided adjacent its locking dog **16** with an extension arm **27** and at its other end provided with a laterally projecting fence post **28** adapted to be received in outwardly opening gates or slots **29**, **31** and **32** one in the periphery of each of multiple discs including a locking disc **33** affixed to and directly operable by the dialing means, an upper combination or permutation disc **34** and a lower combination or permutation disc **35**, respectively. The locking disc **33** is affixed to the reduced inner end

of the hub 36 of a dialing knob 37 (FIG. 2) by inwardly projecting tabs 38 received in longitudinal slots 39 (FIG. 4) in the hub.

The knob 37 as shown in FIG. 2 is mounted in a dial housing 41 having a dial 42 encompassing the hub 36 of the knob. The dial housing 41 and the shackle housing 22 are conformably received and securely retained in the encompassing lock casing 13 with the shackle housing completely enclosed. Between the spaced inner extensions of the flanged exteriors of these housings 22 and 41 is a bolt cap 43 to which is staked a forwardly or outwardly extending cylinder 44 receiving and encompassing a key post or plug 45 having a longitudinal slot or keyway 46 for receiving a proper master key. The key post or plug is journalled for rotation in the base of the shackle housing.

The upper and lower combination discs 34 and 35 are freely rotatable about the fixed cylinder 44 and movable by the locking disc 33 to bring the peripheral gates 29, 31 and 32 into registry with the fence post 28 on the lock bolt 17. Underlying the lock bolt 17 is a floating bolt 47 for key actuation of the lock.

The lock bolt 17 (FIGS. 11 and 12) is provided with an irregular opening 48, a notch 49, a lower projection or arm 50, a pivot opening 51 to receive the stepped pivot pin 26 projecting through and movable in a substantially kidney-shaped slot 52 in the shackle housing 22 (FIG. 15), and a camming pin 53 projecting from its rear surface.

The auxiliary bolt 25 (FIGS. 9 and 10) is provided with an opening 51[a] to receive a pivot pin 54 having its reduced end anchored in an opening 55 in the shackle housnig 22, and a camming post 56 projecting into the irregular opening 48 in the lock bolt 17.

The floating bolt 47 (FIGS. 13 and 14) is pivotally mounted by meatns of a pin or rivet 57 in an opening 58 with the reduced end of the pin anchored in an opening 59 in the shackle housing 22. This floating bolt 47 is also provided with an opening 61 through which projects the reduced end of the lock bolt pivot pin 26, an irregular recess 62 having a shoulder 63 engaged by turning of the keyway 46, laterally projecting and angularly arranged flanges 65 and 66, a laterally projecting post 67 to be received in a gate 68 of a set of lever tumblers 69 each provided with a leaf spring 71, and a leg or projection 72 extending beneath the inner end or head 19 on the leg 12 of the shackle 11. A pin 70 anchored in the shackle housing 22 provides a stop limiting counterclockwise movement of the floating bolt 47.

The shackle housing 22 and the lock casing 13 are each provided with aligned openings at 73 and 74 to receive the long and short legs 12 and 14 of the shackle 11. In the shackle housing 22 are mounted in overlying relation the floating bolt 47, the auxiliary bolt 25 and the lock bolt 17, with a spring-actuated pawl or detent 75 having one end seated in the corner of the angularly arranged flanges 65 and 66 and the other end engaged in the notch 49 on the periphery of the lock bolt 17. Also within the confines of the shackle housing are the spring-biased key or lever tumblers 69 (three being shown), each having a gate 68 to receive the post 67 on the floating bolt 47. These key tumblers each have an opening 76 receiving a pivot pin 77 on the shackle housing 22.

These pivotally mounted key tumblers 69 are arranged and operated in a manner like that of the key tumblers in the North Patent No. 2,001,262 by means of a proper or master key.

The bolt cap 43 is provided on its outer face with a spring-biased trip pawl 78 mounted upon a pin or rivet 79, the pawl normally holding one or both of the permutation discs 34 and 35 in a position to prevent entry of the fence post 28 of the lock bolt 17 into the slots 31 and 32 and thus locking the post in shackle-engaging position. To accomplish such locking the discs 34 and 35 are each provided with a peripheral V-shaped notch 81 adapted to receive a corresponding cam surface 82 on the spring-pressed pawl. When the dial has been manipulated to register with and allow entry of the post 28 on the lock bolt in the slots 29, 31 and 32 of the locking disc 33 and permutation discs 34 and 35, the cam surface 82 is out of the notches 81 and engages the circumference or peripheral edge of these discs removed from these notches and thus releasing the dog or hook 16 from the notch 15 in the leg 14.

When the shackle is now withdrawn to release and open the lock, the locking dog 16 snaps to the release position by means of the spring-actuated pawl 75. As the shackle is returned to its locking position it engages and actuates the lever arm or extension 27 on the lock bolt 17, thereby pivoting the bolt 17 clockwise causing its dog 16 to snap into the notch 15 in the leg 14. The spring-actuated pawl 75 is so mounted and arranged that tension is exerted against the lock bolt 17 at one side of the pivot 26 when this bolt is in retaining position and at the other side of the pivot when the dog 16 is released from the notch 15. This causes the lock bolt 17 to be actuated by a snap action.

By manipulating the dial 42 to effect release of the shackle 11, the slots 29, 31 and 32 in the locking disc 33 and permutation discs 34 and 35 are moved into registry to release the shackle. The locking disc 33 being affixed to the knob 37, rotates therewith and to rotate and move the permutation discs 34 and 35 into registry with the locking disc 33, the latter is provided with a rearwardly projecting boss 83, the upper permutation disc 34 which is intermediate the discs 33 and 35, is provided with a boss 84 on its upper surface and a boss 83 on its under surface, and the lower permutation disc 35 has a boss 84 on its upper surface, these bosses being so arranged as to be picked up by adjacent rotating discs and the discs 34 and 35 are rotated whereby to effect the proper combination. The discs 33, 34 and 35 are spaced apart by spacing washers 85 to limit engagement therebetween by contact of the bosses 83 and 84.

These locking and permutation discs 33, 34 and 35 normally lock the shackle against release but permit release by manipulating the dial to the proper combination, or by master key operation. As the shackle 13 is returned to locking position, the end of the entering leg 14 engages the extension arm 27 on the lock bolt 17 and pivots the lock bolt whereupon the dog 16 on the lock bolt enters the notch 15 on the leg 14 of the shackle.

In the locked position as shown in FIG. 5, the dog 16 of the lock bolt 17 and the post or dog 24 of the auxiliary bolt 25 engages in their notches 15 and 23. When the locking and the combination or permutation discs 33, 34 and 35 have their gates 29, 31 and 32 aligned in position to receive the fence post 28 of the lock bolt 17 as viewed in FIG. 7, the shackle 11 may be retracted from the casing 13 thus opening the lock. If an attempt is made to open the lock when the gates are not in alignment for receiving the fence post 28, the lock bolt 17 and the auxiliary bolt 25 pivot but slightly around their respective pivot pins due to pressure from the shackle. In this position the fence post 28 abuts the outer circumference of one or both of the permutation discs 34 and 35 and/or the locking disc 33 and simultaneously the camming post 56 of the auxiliary bolt 25 interlocks within the opening 48 of the lock bolt and abuts the bolt opening wall. The lock is now jammed or resists entry with the lock bolt 17 remaining engaged in the shackle with its fence post 28 abutting the circumference of the discs 33, 34 and 35, the locking being additionally reinforced against entry by the post or dog 24 of the auxiliary bolt 25 engaged in the notch 23 of the leg 12 of the shackle and the camming post or pin 56 abutting the wall of the opening 48 of the lock bolt 17.

Upon dialing the proper aligned combination, the gates 29, 31 and 32 of the discs 33, 34 and 35 are so positioned

to permit entry of the bolt fence post 28. When the shackle 11 is withdrawn, the lock bolt 17 and the auxiliary bolt 25 are moved by the shackle to pivot about their respective pivot points 26 and 54 with the fence post 28 of the lock bolt 17 driving into the disc gates and rotating the combination discs slightly counterclockwise. This counterclockwise movement of the discs sets up the dispersed action which is inherent in the present construction.

When the shackle 11 is in unlocked position, the auxiliary bolt 25 rides against the periphery of the leg 12 of the shackle and thereby prevents movement of the auxiliary bolt. The auxiliary bolt with its camming post 56 riding in the confines of the lock bolt opening 48 prevents the lock bolt 17 from moving to the locked position by abutting the wall of this opening 48. Thus it will be evident any in and out movement of the shackle without having both of its legs 12 and 14 operatively positioned in the lock casing 13 will not bring the notch 23 of the leg 12 into position to receive the post or dog 24 on the auxiliary bolt 25 and prevent the latter from moving. Also the lock bolt 17 cannot be manipulated to its unlocked position as it is tied integrally to the auxiliary bolt 25 through the camming post 56 of the auxiliary bolt and the opening 48 in the lock bolt 17.

To open the lock with the master key, requires no setting of the combination. For key operation, merely requires insertion of the key into the keyway 46 of the plug or key post 45 and clockwise rotation of the key. The key actuates the three lever tumblers 69 in the same manner as in North Patent No. 2,001,262, to receive the fence post or ear 67 of the floating bolt 47. Insertion of the master or proper key places the lever tumbler gates 68 in proper alignment with the fence post or ear, thus permitting the key to rotate clockwise and moving the floating bolt 47 clockwise.

As the floating bolt 47 and the key continue to rotate clockwise, the leg 72 of this floating bolt comes into contact beneath the head or enlargement 19 of the shackle. As the shackle leg 12 is pushed up or outwardly by the floating bolt, this clockwise movement of the floating bolt repositions the pivot point 26 of the lock bolt 17 to pull up and to the left away from the shackle 11. Movement of the lock bolt actuates the auxiliary bolt 25 through its camming post 24 causing the auxiliary bolt to pivot about its pivot point 54 and pulling out of the engagement of its post 24 from the notch 23 in the shackle leg 12. To further assist movement of the lock bolt 17 and the auxiliary bolt 25 out of shackle engagement, the lower leg or projection 50 of the lock bolt 17 makes contact with the key post 45 and further clockwise movement of the floating bolt 47 not only moves the lock bolt 17 to the left, but the bolt 17 now rotates slightly counterclockwise about its pivot 26 as the lower leg 50 pushes against the key post. This causes both the dog 16 of the lock bolt 17 and the fence post 24 of the auxiliary bolt 25 to pull quickly out of the shackle notches 15 and 23. Assisting in this action is the over-center bolt spring 75.

The key need not remain in the lock to effect locking, the key merely requiring rotation clockwise to key-out position and the key then removed. Although spring pressure of the over-center bolt spring 75 helps to prevent lock-out, in the present invention the addition of the auxiliary bolt 25 effectively and positively prevents accidental or intentional lock-out.

To effect locking, the short leg 14 of the shackle is aligned and inserted into the lock opening 74 and the shackle pressed downwardly. The left leg 12 engages with the lower leg 72 of the floating bolt 47, camming this floating bolt counterclockwise. As the shackle is further depressed, the end of the shackle leg 14 engages the lock bolt extension arm 27 with the shackle leg 12 still in contact with the leg 72 of the floating bolt 47. Further depressing the leg 12 pushes the floating bolt 47 counterclockwise toward its locking position and currently therewith the force of the end of the leg 14 against the arm 27 of the lock bolt 17 causing the lock bolt to pivot clockwise and effecting operation of the over-center bolt spring 75, whereupon the notches in the legs 14 and 12 of the shackle are in position to receive the dog 16 and 24 of the lock bolt and the auxiliary bolt and locking the shackle 11 by a snap action. In this position, the three spring-biased lever tumblers 69 abut against the fence post or ear 67 of the floating bolt 47 and dead lock the floating bolt into the locked position until the proper master key is again used.

Having thus disclosed the invention, I claim:

1. In a combination shackle lock assembly, a lock casing, shackle locking components including a shackle, a lock bolt pivotally mounted in the casing having a dog engageable in a notch in one leg of the shackle, an auxiliary bolt pivotally mounted in the casing having a dog engageable in a notch in the other leg of the shackle, permutation discs rotatable in said casing and having registering gates, a fence post integral with said lock bolt and receivable in registering gates in said discs when the proper combination is dialed, and means connecting the lock and auxiliary bolts for withdrawal of their dogs from engagement with the legs of the shackle upon release of the shackle including a camming post on said auxiliary bolt, said lock bolt having an irregular opening receiving said camming post, said post engaging the defining wall of said opening.

2. In a combination shackle lock assembly as set forth in claim 1, including a shackle housing within said casing and having a kidney shaped slot therein, and a pivot pin projecting into said slot, said lock bolt being mounted on said pivot pin so as to allow withdrawal of said locking dog from said shackle without dialing the combination.

3. In a combination shackle lock assembly as set forth in claim 2, including a key-actuated floating bolt having an opening conformably receiving said pivot pin so as to unlock said lock bolt from the shackle by means of a master key.

4. In a combination shackle lock assembly as set forth in claim 3, including a camming pin on said lock bolt engaging the periphery of said floating bolt so that the return of said shackle causing pivotal movement of said lock bolt will return the floating bolt to locked position by the camming pin.

5. In a combination shackle lock assembly as set forth in claim 1, in which said shackle when released maintains the lock components against accidental as well as intentional lockout.

6. In a combination shackle lock assembly as set forth in claim 1, in which when the shackle is released and withdrawn, the lock and auxiliary bolts are moved by the shackle as it is withdrawn to pivot about their pivot points with the fence post on the lock bolt moving in the disc gates and rotating the permutation discs counterclockwise sufficiently to disperse the combination.

7. In a combination shackle lock assembly as set forth in claim 6, including a floating bolt, an over-center bolt spring carried by said floating bolt and engaging said lock bolt with said spring snapping the lock and auxiliary bolts into unlocked position as the releaser shackle is withdrawn and cams the lock and auxiliary bolts from locked to unlocked position.

8. In a combination shackle lock assembly, a lock casing, a knob, dial and permutation discs rotatable by turning of the knob, shackle locking components including a shackle, a lock bolt having a dog engageable with one leg of the shackle, an auxiliary bolt having a dog engageable with the other leg of the shackle, said lock bolt having a fence post receivable in registering gates in the discs when the knob is turned to effect the proper combination and location of the discs and the shackle is released for withdrawal from its locked engage-

ment with the lock and auxiliary bolts, withdrawal of the shackle pivoting the lock and auxiliary bolts to release these bolts from dogging engagement with the shackle, and means connecting the lock and auxiliary bolts for withdrawal of their dogs from engagement with the legs of the shackle upon release of the shackle including a camming post on said auxiliary bolt, said locking bolt having an irregular opening, said camming post projecting into and engaging the defining wall of said opening, whereby pulling on the shackle in an attempt to open the lock assembly when the gates are out of alignment, and thus incapable of receiving therein the fence post, causes the lock bolt and the auxiliary bolt to pivot but slightly about their pivot points with the fence post of the lock bolt abutting the outer circumference of one or more of the permutation discs and the camming post on the auxiliary bolt interlocking within the irregular opening in the lock bolt, whereby the lock assembly is jammed and resists entry and the lock assembly is reinforced against entry by engagement of the dog of the auxiliary bolt in the notch of the shackle.

9. In a combination shackle lock assembly, a lock casing, a key-actuated floating bolt, shackle locking means including a pivoted lock bolt and a cooperating pivoted auxiliary bolt with each bolt engageable with and retaining the shackle in locked position, combination discs cooperable with the lock bolt to lock the latter in shackle-engaging relation, said lock bolt being provided with a dog for inter-locking engagement with the shackle and a fence post adapted to be received in registering gates in the combination discs, a locking dog and a camming post on said auxiliary bolt, said locking dog engaging in a notch in a leg of the shackle and said camming post movable in an irregular opening in the lock bolt for camming engagement between the lock bolt and the auxiliary bolt, means for rotating said discs to release the lock bolt and the auxiliary bolt from locking engagement with the shackle, and snap-action spring means carried by the floating bolt for retaining the lock bolt either in shackle engaging position or in retracted position.

10. In a combination shackle lock assembly as set forth in claim **9**, in which when the shackle is in unlocked position, the auxiliary bolt rides against the exterior surface of the shackle and the auxiliary bolt is thereby held against pivotal movement.

11. In a combination shackle lock assembly as set forth in claim **10**, in which the camming post on the auxiliary bolt rides within the confines of the opening in the lock bolt and abuts the wall of said opening to prevent the lock bolt from moving to its locked position.

12. In a combination shackle lock assembly as set forth in claim **11**, in which the lock bolt cannot be manipulated from locked to unlocked position except upon pivotal movement of the auxiliary bolt and the latter coacting with the lock bolt, and the locking dog of the auxiliary bolt cannot enter its slot in a leg of the shackle except when both legs of the shackle are received and depressed in the lock casing.

13. In a combination shackle assembly as set forth in claim **9**, in which the lock bolt is provided with an extension arm spaced from its dog whereby upon insertion of the removable leg of the shackle into the opening therefore in the lock casing, the end of said leg abuts the extension arm pivoting the lock bolt clockwise about its pivot and in turn the lock bolt rotates the auxiliary bolt as its camming post is rotated by its engagement with the wall of the opening in the lock bolt.

14. In a combination shackle lock assembly as set forth in claim **13**, in which the floating bolt has an ear and a leg projecting therefrom, a key post having a keyway for a master key, key-actuated and pivotally mounted lever tumblers each having a gate to receive the ear on said floating bolt upon insertion and clockwise turning of the proper key in the key way of the key post and as the key and floating bolt continue clockwise movement the leg of the floating bolt contacts the lower end of the longer leg of the shackle and as this leg of the shackle is pushed upwardly and outwardly by the floating bolt, causes the lock bolt to pivot upwardly and away from engagement with the shackle as the latter is being withdrawn, the movement of the lock bolt in turn actuates the auxiliary bolt through its camming post and coaction with the lock bolt and causing the dog of the auxiliary bolt to pivot out of its locking engagement with the shackle.

References Cited

UNITED STATES PATENTS

1,155,405	10/1915	D'Angelo	70—21
2,001,262	5/1935	North	70—21
2,441,395	5/1948	Miller	70—289
2,477,325	7/1949	Yokubik	70—25
2,931,203	4/1960	Chek	70—21

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U.S. Cl. X.R.

70—25, 303