

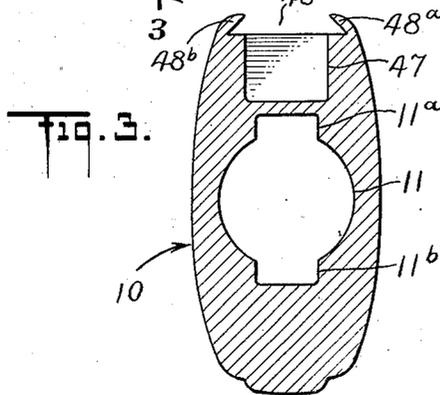
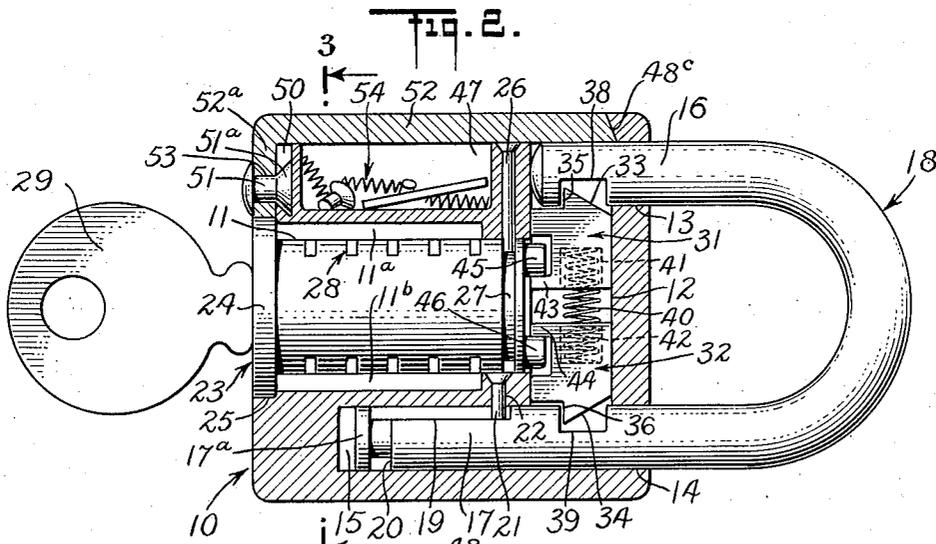
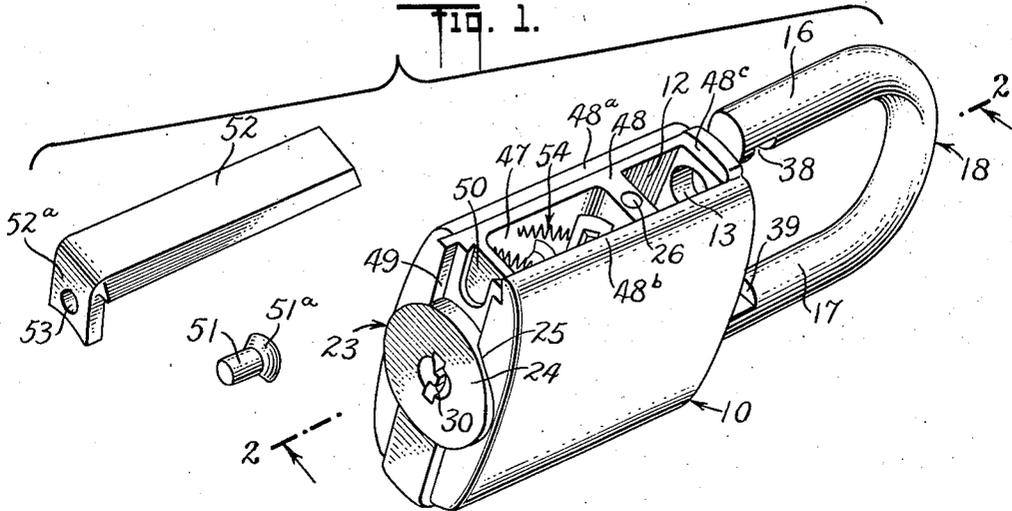
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LOCK CONSTRUCTION

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## LOCK CONSTRUCTION

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This invention relates to a lock construction and more particularly to padlocks or the like.

One of the objects of this invention is to provide a lock construction which will be simple, practical and thoroughly durable. Another object is to provide a construction of the above character which may be easily manufactured with a minimum amount of labor and with inexpensive materials. Another object is to provide a construction of the above character which while being durable and lasting is nevertheless neat in appearance. Another object is to provide a construction of the above character which may be easily assembled and repaired with extreme ease. Another object is to provide a construction of the above character which may be disassembled for purposes of repair without undue damage to any of the parts thereof. Another object is to provide a construction of the above character which is capable of permanently carrying a plurality of spare parts in a convenient manner without sacrificing economy of manufacture and effectiveness of operation. Other objects will be in part obvious and in part pointed out hereinafter.

The invention accordingly consists in the features of construction, combinations of elements and arrangements of parts as will be exemplified in the structure to be hereinafter described, and the scope of the application of which will be indicated in the following claims.

In the accompanying drawing in which is shown one of the various possible embodiments of this invention,

Figure 1 is an exploded perspective view showing my lock construction as partially assembled;

Figure 2 is an enlarged vertical sectional view taken along the line 2—2 of Figure 1, and

Figure 3 is a vertical sectional view taken along the line 3—3 of Figure 2 of the casing of my lock construction, the other parts thereof having been removed for purposes of clarity.

Similar reference characters refer to similar parts throughout the several views of the drawing.

As conducive to a clearer understanding of certain features of this invention, it might here be pointed out that considerable difficulty has been encountered in the repair of lock constructions and more particularly padlocks or the like. These locks are necessarily rugged in construction and hence often difficult to disassemble for purposes of repair. When such locks are disassembled, often it is necessary to so damage the outer casing or various parts connected thereto

that the lock is practically ruined and cannot be put back into its original condition. Further still, such locks are used in widely scattered sections of the country where it is difficult to obtain spare parts upon short notice, thus causing delay for a considerable period of time while the spare parts are shipped over long distances. One of the objects of this invention is to provide a construction in which the several difficulties hereinabove mentioned are successfully and efficiently overcome.

Referring now to Figure 2, there is generally indicated at 10 a casing comprising the main body portion of my lock. Formed within casing 10 is a cylindrical recess 11 to be more fully described hereinafter, while a chamber 12 extends transversely along the right-hand end of casing 10, as viewed in Figure 2, a portion thereof being connected with recess 11. A pair of holes 13 and 14 extend through the top of the casing (the right-hand side as viewed in Figure 2) into chamber 12 and a recess 15 of considerable length extends into casing 10 in registry with hole 14.

The end portions 16 and 17 of a U-shaped part or shackle generally indicated at 18 extend through holes 13 and 14. Thus as clearly shown in Figure 2, end 16 may rest at one end of chamber 12 and end 17 which is of greater length extends into recess 15. One side of end portion 17 is reduced to form a slot 19 connected to an annular groove 20 substantially near the extremity of end portion 17. A pin 21 fits within a hole 22 formed in casing 10 so that the extremity thereof extends within slot 19. The upper end of pin 21 is preferably enlarged to hold it in this position but, as will be explained more fully hereinafter, pin 21 may drop out of the hole when recess 11 is empty.

Thus under certain circumstances to be described more fully hereinafter, U-shaped part 18 may be moved in a right-hand direction as viewed in Figure 2 until the end of pin 21 engages shoulder 17a of end portion 17 immediately adjacent groove 20. Due to the length of slot 19, end portion 16 is then free from casing 10 and accordingly part 18 may pivot about end portion 17 as an axis, pin 21 being in groove 20. Further outward movement of part 18 is prevented by pin 21, but when the part is rotated so that slot 19 is in registry with pin 21, end portion 16 is in registry with hole 13 and the part may be moved to the left to assume the position shown in Figure 2.

Fitted within recess 11 is a lock cylinder or key plug generally indicated at 23 preferably having

an annular flange 24 formed on one end thereof and seated within a recess 25 in the left-hand end of casing 10, as viewed in Figure 2. Thus flange 24 rests against shoulders forming the bottom of recess 25 and is held in this position by a pin 26 (Figure 2) extending through a portion of casing 10 and having an end fitting within a circumferentially extending groove 27 in lock cylinder 23.

Lock cylinder 23 carries a series of tumblers generally indicated at 28 extending from the interior thereof through suitable slots formed therein. Tumblers 28 are so proportioned as to fit within longitudinal channels 11a and 11b (Figure 3) formed on the opposite sides of recess 11 when lock cylinder 23 is in proper position. Furthermore these tumblers are preferably disc-like in shape, this type of tumbler being more admirably adapted for the present construction due to the small amount of space required therefor. Tumblers 28 and the other apparatus associated therewith within lock cylinder 23 are constructed in the usual manner so that when a key 29 is inserted in a hole 30 in the lock cylinder (Figure 1), the key draws all of the plungers down into the cylinder so that none of them extend above the periphery thereof. In this manner the tumblers are drawn out of channels 11a and 11b (Figure 3) and the lock cylinder may then be rotated by means of key 29.

A pair of bolt or shackle-dogging members generally indicated at 31 and 32 are located within chamber 12 (Figure 2). Bolt members 31 and 32 have beveled side portions 33 and 34 terminating in shoulders 35 and 36. Shoulders 35 and 36 may fit within notches 38 and 39 located in the opposite sides of U-shaped part 18 and are preferably held in this position by a spring 40 seated within suitable apertures 41 and 42 on the opposing end of the bolts.

As best shown in Figure 2, bolts 31 and 32 are preferably equal in width to chamber 12 and their left-hand sides, as viewed in this figure, are cut away to provide a pair of shoulders 43 and 44. Shoulders 43 and 44 preferably extend from the top to the bottom of chamber 12 as viewed in Figure 2. Extending from the end of lock cylinder 23 is a pair of studs 45 and 46 preferably in registry with shoulders 43 and 44. Notches 38 and 39 are sufficiently deep so that spring 40 may force shoulders 43 and 44 into engagement with the studs.

Thus when the parts are in the position shown in Figure 2 and tumblers 28 extend into channels 11a and 11b (Figure 3), shoulders 35 and 36 are seated within notches 38 and 39 to prevent right-hand movement of part 18 as viewed in this figure. However, when key 29 is inserted in cylinder 23 so that the cylinder may be rotated as described above, rotation thereof moves shoulders 43 and 44 and consequently bolts 31 and 32 toward each other against the action of spring 40. This action continues until shoulders 35 and 36 are free from notches 38 and 39 after which U-shaped part 18 may be moved to the right and rotated about the axis of end portion 17 as described above.

As best shown in Figures 1 and 2, there is located in the upper portion of casing 10 a chamber 47, being alongside and to the left of the chamber 12, the chambers 47 and 12 being separated by an intervening wall portion of the casing structure, that wall portion being the portion earlier above referred to and having a hole therein for receiving the pin 26 (Figures 1 and 2); the upper or open ends of the chambers 47 and 12 and of the hole

26 (see Figure 1) are thus seen to be directed into or toward one side edge or face of the casing 10, namely the upper side as viewed in Figures 1, 2 and 3. Chamber 47 opens onto a longitudinal channel 48 (Figures 1 and 3) extending along the upper side of casing 10 as viewed in Figure 1, and from the latter it will be seen that the channel 48 is of sufficient extent toward the right to have the hole 26 and the chamber 12 communicate into or with it, just as does chamber 47. The opposite sides 48a and 48b (Figure 3) and the end 48c (Figure 1) of channel 48 are preferably beveled inwardly. Immediately adjacent and to the left of channel 48 (Figure 1) and connected therewith is a channel 49 formed on the end of the casing. The bottom of channel 49 has formed therein a chamber 50 preferably having its sides provided with a U-shaped flange, as by being beveled outwardly to receive the beveled head 51a of a rivet 51 (Figure 2). Chamber 50 extends into channel 48 as does the open end of the U-shaped flange thereof, and consequently rivet 51 may be slipped therein or removed therefrom with ease.

A cover plate 52 fits within channel 48, being, as shown in Figures 1 and 2, the same length as channel 48, thus covering over the upper openings of chamber 47, hole for the pin 26 (thereby preventing the latter from moving out of the peripheral groove 27 in the key plug 23) and chamber 12, and has its opposite sides beveled outwardly to correspond with walls 48a and 48b (Figure 3) and is thus held in position over chamber 47, hole for pin 26, and chamber 12, thereby. The left-hand end of cover plate 52 has a right angle projection 52a fitting within channel 49 and is also provided with a hole 53 through which rivet 51 extends. Rivet 51 is headed over on portion 52a (Figure 2) thus to hold cover plate 52 in its closing position within channel 48 and prevent sliding thereof.

Before assembly, as described above, I prefer to place in chamber 47 a plurality of spare parts generally indicated at 54. Thus these parts preferably take the form of spare tumblers, pins, springs, and always a small supply of rivets such as rivet 51. Accordingly when the lock is assembled as shown in Figure 2, parts within chamber 47 do not interfere with the successful and efficient operation of my lock and yet are readily available in case repair becomes necessary.

For example if my lock gets out of order for any reason, it is merely necessary to file off the head of the rivet 51 (Figure 2) and then slide cover plate 52 free from channel 48. The parts 54 in chamber 47 are thus made available and also the lock may be readily disassembled by positioning the casing so that channel 48 is bottom side up. When in this position, pin 26 slides out of the casing thus allowing for the removal of lock cylinder 23 from recess 11. The removal of the lock cylinder allows pin 21 to drop out, and, when spring 40 is removed, bolts 31 and 32 may be moved inwardly to permit the displacement of part 18 from the casing. A complete disassembly of my lock may be thus accomplished with a minimum amount of labor and without damaging any part except rivet 51.

After the necessary repairs have been effected including, if necessary, the use of any of the parts 54, the lock may be reassembled as described above and the parts 54 replaced in chamber 47. A new rivet replaces rivet 51 and may be easily slid into its groove-like chamber 50 (Figure 1) when cover plate 52 has been removed. With the new rivet in position cover

plate 52 may be replaced and the rivet headed over, my lock construction then being in as satisfactory condition as when new. Thus not only are spare parts available at all times during the use of my lock, but it may be readily disassembled for purposes of repair without damaging any vital parts thereof and with a minimum amount of labor.

Accordingly it will be seen that I have provided a thoroughly practical and efficient construction in which the several objects hereinabove mentioned as well as many others are successfully carried out.

As many possible embodiments may be made of the above invention and as many changes might be made in the embodiment above set forth, it is to be understood that all matter hereinbefore set forth or shown in the accompanying drawing is to be interpreted as illustrative and not in a limiting sense.

I claim:

1. In a lock construction, in combination, a lock casing having a plurality of chambers therein, one of said chambers opening at an edge thereof, another of said chambers opening at an end thereof in right-angled relation to said first-named chamber, dovetailed grooves adjacent the outer extremities of the walls of one of said chambers, a cover for said chambers comprising an L-shaped member, the edges of one arm of said L-shaped member being formed to engage said dovetailed grooves and the other arm thereof closing the other chamber, and means to hold said cover in chamber-closing position.

2. In a lock construction, in combination, a lock casing having a plurality of chambers therein, one of said chambers opening at an edge thereof, another of said chambers opening at an end thereof in right-angled relation to said first-named chamber, dovetailed grooves adjacent the outer extremities of the walls of one of said chambers, a cover for said chambers comprising an L-shaped member, the edges of one leg of said member being so formed as to engage said dovetailed grooves, barrier means between said chambers, a U-shaped flange in said second-named chamber closely adjacent but not in contact with said barrier means, said L-shaped member having an opening in the other leg thereof, and means engaging said U-shaped flange and said closure member through said opening to secure said cover to said casing.

3. In padlock construction, in combination, a casing structure having a substantially centrally positioned bore open at one end of said structure but of less axial length than the length of said structure, said structure having a chamber adjacent the other end of said structure and extending at right angles to the axis of said bore, said chamber being open at a side of said structure and there being an aperture through which said bore communicates with said chamber, the wall, at said other end having two holes there-through communicating with said chamber and said casing structure having a cylindrical recess in alinement with one of said holes and extending substantially parallel to but separated from said bore, a U-shaped shackle having one leg longer than the other, said longer leg extending through one of said holes and into said recess to be rotatably and slidably supported thereby and the short leg thereof being receivable into the other end of said chamber through said other hole, a key plug in said bore, said key plug and casing structure having tumbler-receiving recesses and

there being tumbler means coacting therewith under the control of a key, said two legs of said shackle having recesses therein facing toward each other and so positioned that, when said shackle has its short leg entered through its hole and into said chamber, said two recesses face toward each other within the latter, a pair of dogging members within said chamber and each shaped to coact with one of said notches, said dogging members being insertable through the open end of said chamber when said shackle has its short leg withdrawn therefrom, said key plug having means projecting through said aperture and into said chamber for controlling the positions of said dogging members in accordance with the actuation of said key plug by a key, a plate-like member closing the otherwise open end of said chamber, said plate-like member being interfitted with the walls of the said side of said casing structure, and means securing said plate-like member to said structure.

4. A construction as claimed in claim 3 in which the said chamber is of rectangular cross-section and in which the said dogging members are of mating cross-section, whereby they are slidably guided by the walls of said chamber each toward or away from its associated shackle leg recess.

5. A construction as claimed in claim 3 in which the dogging members are slidably guided by the walls of said chamber and have spring means interposed therebetween to force them away from each other and in which the plug means that extends through said aperture comprises pin and slot connections between the key plug and said dogging members.

6. A construction as claimed in claim 3 in which the key plug is provided with a slot, there being a member held against removal by said plate-like member for engaging into said slot to hold the key plug against removal from its bore.

7. A construction as claimed in claim 3 in which the portion of the long leg of the shackle that is received in said cylindrical recess is provided with a stop portion, and means carried by said structure and positioned in the path of said stop portion, thereby to limit the withdrawal movement of said shackle from said casing structure, but insertable or removable only under the control of said plate-like member.

8. In padlock construction, in combination, a casing structure having a substantially centrally positioned bore open at one end of said structure but of less axial length than the length of said structure, said structure having a chamber adjacent the other end of said structure and extending at right angles to the axis of said bore, said chamber being open at a side of said structure and there being an aperture through which said bore communicates with said chamber, the wall at said other end having two holes there-through communicating with said chamber and said casing structure having a cylindrical recess in alinement with one of said holes and extending substantially parallel to but separated from said bore, a U-shaped shackle having one leg longer than the other, said longer leg extending through one of said holes and into said recess to be rotatably and slidably supported thereby and the short leg thereof being receivable into the other end of said chamber through said other hole, a key plug in said bore, said key plug and casing structure having tumbler-receiving recesses and there being tumbler means coacting therewith under the control of a key, one of said

shackle legs having a recess therein facing toward the other and exposed to said chamber when said shackle is in "locking" position, a dogging member slidably guided in said chamber and insertable therein through said open end of said chamber, means at the inner end of said key plug and projecting into said chamber for coaction in controlling the position of said dogging member in accordance with the position of said key plug, and a casing-counterpart member fitted into and secured in the open end of said chamber for closing the latter and for completing the casing.

9. A construction as claimed in claim 8 in which there is a channel in a wall portion of said casing structure extending from a point adjacent the open end of said chamber and communicating with said bore, said key plug having a slot therein, and a member underneath said casing-counterpart member fitted into said channel and extending into the slot in said key plug.

10. In padlock construction, in combination, a casing structure having a bore therein and a plurality of chambers having open ends accessible through a side edge of said casing structure, the first of said chambers extending substantially at right angles to said bore and having communication with the latter, said casing structure having an elongated recess extending along said bore and also communicating with said first chamber, there being an opening in the end wall of said casing structure adjacent to which said first chamber extends and opposed to said recess, said end wall having a second opening spaced from said first-mentioned opening, a U-shaped shackle having a long leg receivable into said recess and a short leg receivable into said second opening, shackle-dogging means in said first chamber and insertable into the latter through its open end, a key plug in said bore and having means operative upon said dogging means, a casing-counterpart member fitted into and closing said first chamber and closing the otherwise open end of the second of said chambers and having means thereunder coacting to hold said key plug against removal, and means coacting with the walls of said second chamber for holding said casing-counterpart member against removal.

11. A construction as claimed in claim 10 in which said casing counterpart member is substantially L-shaped, one arm portion of which closes said first chamber, and in which the means for securing said counterpart member to said casing structure comprises means coacting be-

tween said walls of said second chamber and the other arm of said L-shaped counterpart member.

12. A construction as claimed in claim 10 in which said casing counterpart member is substantially L-shaped, one arm portion of which is received into said first chamber to close the latter, and in which the means for securing said counterpart member to said casing structure includes a rivet headed over the other arm of said L-shaped counterpart member, said walls of said second chamber being constructed to detachably engage the base-head of said rivet.

13. A construction as claimed in claim 10 in which the long leg of said shackle is provided with spaced stop means and the wall portion of said casing structure intervening said bore and the recess in which the long leg is received has an aperture therein, and a member insertable through said aperture for coaction with said spaced stop means and held against movement into the bore by the key plug itself.

14. In a lock construction, in combination, a lock casing having a bore and a plurality of chambers therein, one of said chambers being open at a side edge of said casing to one side of said bore, a second of said chambers opening at an end of said casing in right-angled relation to said first-named chamber, said first-mentioned chamber extending transversely of and at one end of said casing and communicating with said bore, the end wall of said casing adjacent said first chamber having two holes, a U-shaped shackle having a long leg receivable into the bottom end of said first chamber through one of said holes and a short leg receivable into said first chamber through the other of said holes, shackle-dogging means in said first chamber and insertable into the latter through its open end in said side edge, a key plug in said bore and having means operative upon said dogging means, said first-named chamber having dovetailed grooves adjacent the outer extremities of the walls thereof, means for holding said key plug against removal and including a part placed in operative relation to said casing and to the key plug, a cover for said chambers comprising an L-shaped member, the edges of one arm of said L-shaped member being formed to engage said dovetailed grooves and said arm holding said part against removal and closing the open end of said first chamber, and the other arm thereof closing said second-named chamber, and means coacting between said other arm and said second chamber to hold said cover in chamber-closing position.

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