Nov. 25, 1958 J. A. SMITH 2,861,667

COIN AND KEY OPERATED LOCK

Filed Aug. 16, 1955 2 Sheets-Sheet 1

FIG-1

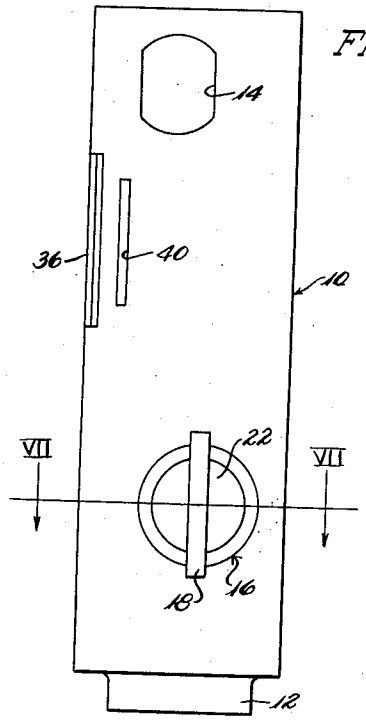


FIG-2

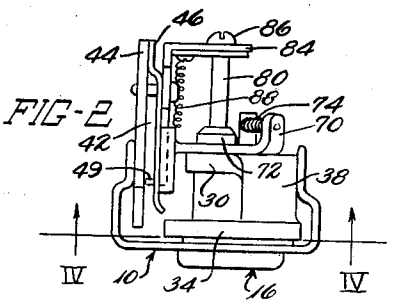
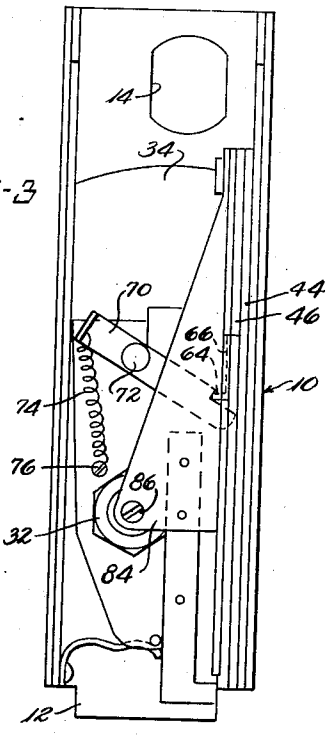


FIG-3



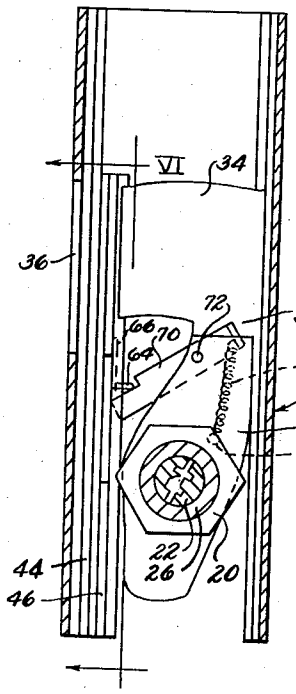


FIG-4

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COIN AND KEY OPERATED LOCK

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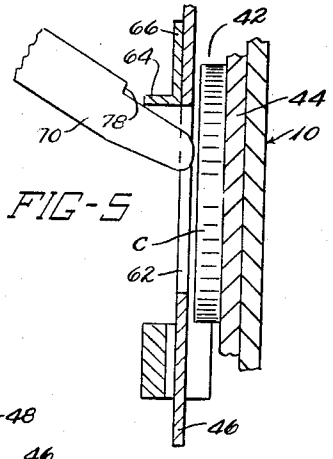


FIG-5

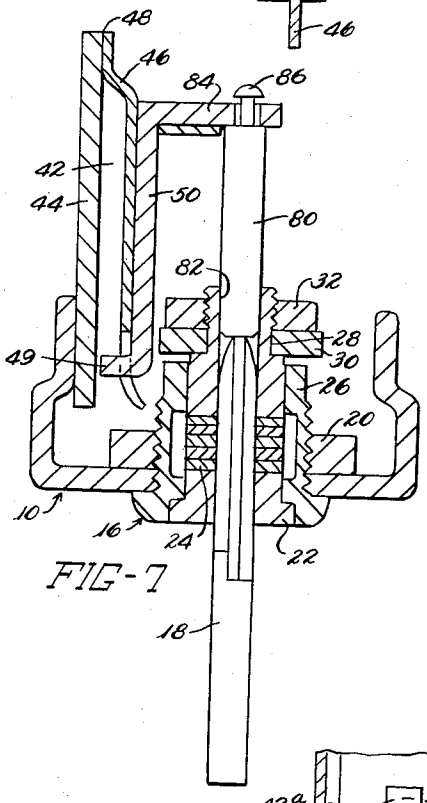


FIG-7

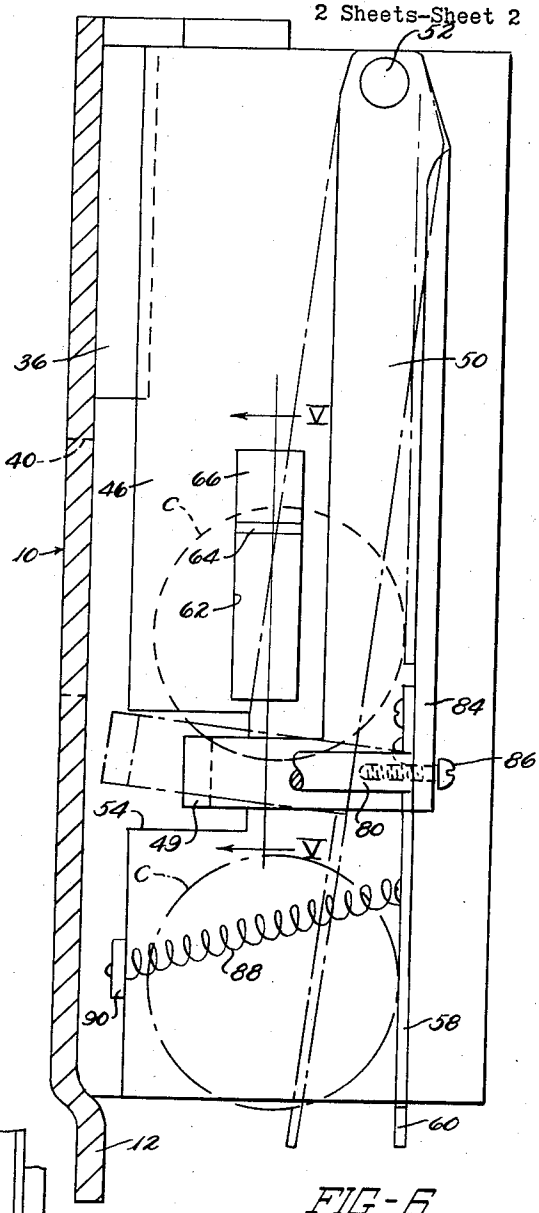


FIG-6

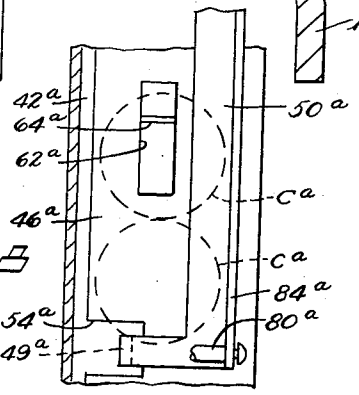


FIG-8

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COIN AND KEY OPERATED LOCK

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5 Claims. (Cl. 194—54)

This invention relates to locks for baggage and storage lockers, and, more particularly, is concerned with locks of the indicated type operated by a coin or coins and a key.

Heretofore, various types of coin and key operated locks have been provided for baggage and storage lockers. However, such known locks have been relatively complicated requiring considerable tooling costs and often involving a relatively large number of parts so that manufacturing costs are comparatively high. Additionally, such known locks, so far as I am aware, have not been capable of being operated upon the insertion of a coin followed by the return of the coin to the user of the storage locker when the key is returned to the locker and the stored article is removed.

Moreover, existing lock structures are not readily converted to constructions requiring a plurality of coins to be deposited in the lock before it can be operated, and locks of this readily converted type have a distinct field of use in operations abroad where depreciation of the foreign countries' currency require a plurality of coins, such as a 20-franc coin for example, to be deposited to equal a reasonable charge for the service of a locker.

It is the general object of my invention to avoid the foregoing and other difficulties of and objections to prior art practices by the provision of a relatively simple, inexpesive readily tooled lock of the coin and key operated type having a minimum of parts, but being durable and maintenance free in operation over long periods of time.

Another object of my invention is to provide a lock of the character described and capable of use in two distinct manners, namely, (1) of being operated by the key when a coin is deposited in the lock and followed by the return of the coin to the user of the locker when the key is returned to the locker, or (2) which operates in accord with the procedure of (1) except that the coin is passed to a coin box associated with the locker and is retained by the proprietor of the lockers.

Another object of my invention is the provision of a locker of the coin and key operated type and operable by a plurality of coins, usually of the same denomination, rather than by a single coin, all with very minor changes in the construction of the lock.

Another object of my invention is to provide a coin-controlled lock which can be operated with one coin, or a selected plurality of coins, or which may be operated free of charge as an accommodation service to customers by automatically returning the coin or coins when the key is returned and the locker is unlocked.

For a better understanding of my invention, reference should be had to the accompanying drawings wherein Fig. 1 is a front elevation of a lock constructed to incorporate the principles of the invention;

Fig. 2 is a plan view of the lock illustrated in Fig. 1;

Fig. 3 is a back elevation of the lock of Figs. 1 and 2;

Fig. 4 is a fragmentary, vertical, cross-sectional view taken substantially on line IV—IV of Fig. 2;

Fig. 5 is an enlarged fragmentary view of the pawl and catch, coin, and coin receiving slot, substantially as taken on line V—V of Fig. 6.

Fig. 6 is a view taken substantially on line VI—VI of Fig. 4, but on enlarged scale, and illustrating the manner of positioning the coin in the coin receiving chute;

Fig. 7 is a view substantially on line VII—VII of Fig. 1, but to an enlarged scale, and illustrating the manner of controlling with the locker key, the positioning of the finger means controlling the movement of the coin through the coin chute; and

Fig. 8 is a fragmentary view similar to Fig. 6, but on the scale of Figs. 1 to 4, and showing the manner of converting the lock to operation by plurality of coins.

In the drawings, the numeral **10** indicates generally a stamped and formed sheet metal channel adapted to mount the entire lock mechanism of the invention, with the channel being adapted to be removably associated with a baggage or storage locker in a readily replaceable or interchangeable manner. This is accomplished by forming an integral tongue **12** at one end of the channel member **10** which is offset, as best seen in Fig. 6 so as to be received in a slot or behind a shoulder in the locker to secure that end of the channel in position. The other end of the channel is locked in position by a lock mounted in the opening **14**, at the upper end of the channel.

A barrel and tumbler type lock, indicated as a whole by the numeral **16**, and having an operating key **18** is secured by a nut **20** (see Fig. 7) in the channel **10**, with the rotating barrel **22** having the usual operating tumblers **24** which lock between the barrel **22** and the lock casing **26** when the key **18** is removed. The barrel **22** of the lock **16** is formed with a squared shoulder **28** received in a complementary hole in a latch **30**, held on the barrel **22** by nut **32**. The latch **30**, perhaps best seen in Fig. 4, has a laterally directed keeper portion **34**, which is adapted to be moved through a slotted opening **36** in the side of the channel **10** and into engagement with a complementary keeper or slot in the locker door (not shown) upon rotation of the key **18**, barrel **22**, and latch **30**. Note that the keeper portion **34** of the latch **30** is positioned closely behind the inside face of the channel **10** with an offset **38** (Fig. 2) connecting the keeper portion **34** with the main latch body **30**.

The channel **10** is provided on its front face with a slot **40** for receiving a metal coin C, for example, a dime or a quarter, with the coin after being pushed through slot **40** being received in a coin receiving channel or passage **42** defined in part by a plate **44** spot welded or otherwise secured to an edge of the channel **10**. A somewhat thinner sheet metal plate **46** forms the other side of the coin receiving passage **42**, the plate **46** being spot welded or otherwise secured at **48** to the plate **44**.

Fig. 6 illustrates a coin C which has been pushed through slot **40** into the coin receiving passage **42**, and which has fallen laterally downward in the passage, under the action of gravity, until striking a lug **49** extending into the coin passage **42** and formed on the end of an arm **50** pivotally secured at **52** to the plates **44** and **46**. The plate **46** is formed with a cut out portion **54** to allow the movement of the arm **50**, and the lug **49** from the full line position shown in Fig. 6 to the chain-dotted position likewise shown in Fig. 6, this movement being achieved in the manner hereinafter described. Suffice it to say here that when the parts are in the full line position of Fig. 6, the coin C is retained in the dotted line position shown, but when the arm **50** and lug **49** are moved to their chain-dotted position, then the coin drops to the chain-dotted position shown in Fig. 6.

The movement of the coin C through the coin receiving passage **42** is stopped when the coin reaches the

chain-dotted position for the reason that a finger 58 having a shoulder 60 formed at its lower end is moved from the solid line position of Fig. 8 to the chain-dotted position, and in this position, the shoulder 60 engages with the lower edge of the coin to stop it in the chain-dotted position.

Returning now to the operation of the mechanism with the coin C in the dotted position of Fig. 6, the metal plate 46 is provided with a window 62 adjacent the position C of the coin, and with the upper edge of the window having a catch 64 of right-angle shape upstanding from a plate 66 spot-welded or otherwise fastened to the plate 46.

Looking now at Figs. 2, 3, 4 and 5, it will be noted that the latch 30 has a pawl 70 pivotally secured thereto at 72, the pawl 70 being urged into engagement with catch 64 by a tension spring 74 extending between one end of the pawl 70 and a post 76 secured to the latch member 30. The pawl 70 is formed with a shoulder 78 which normally engages with the catch 64 to prevent rotary movement of the latch member 30 without coin C being present in the coin-receiving passage 42.

Thus, the latch member 30 cannot be rotated when there is no coin C present in the coin-receiving passage 42. However, when the coin C is present in the coin-receiving passage 42, the end of the pawl 70, as shown in Fig. 5, engages with the coin C through the window or opening 62 upon the initial movement of the latch member 30 with the key 18, and because the end of the pawl 70 strikes the coin, the shoulder 78 of the pawl is moved away from the catch 64 and against the tension in spring 74, and the latch member 30 can then be rotated so that the keeper portion 34 extends through the opening 36 in the channel and into engagement with the keeper on the locker door. It will be understood that positioning of the key 18 in the barrel 22 aligns the tumblers 24 of the lock 16 so that barrel 22 can be rotated by the key in relation to the casing 26 of the lock 16.

The placement of the key 18 in the barrel 22 of the lock 16 causes the end of the key 18 to engage with a rod or pin 80 (see Figs. 6 and 7), the end of which extends into a bore 82 in the squared end 28 of the barrel 22 of the lock 16. The rod 80 is connected to a right angle flange 84 formed on the arm 50, as by screw 86 extending through an enlarged hole in the flange 84, so that the rod 80 will have some freedom to tilt in relation to the flange 84 upon movement of the arm 50. A coiled tension spring 88 (Fig. 6) extends between the finger 58 carried by the arm 50 and a lug 90 bent up from the plate 46 so that the arm 50, lug 49, finger 58, and shoulder 60 are all urged towards the chain-dotted position by the spring 88. Thus, with the key 18 removed from the lock 16, rod 80 moves inwardly into bore 82 under the action of spring 88 allowing the arm 50 and its associated parts to swing to the chain-dotted position. When the key 18 is inserted into the lock 16, the end of the key strikes the rod 80 and moves the arm 50 and its associated parts to the full line position shown in Fig. 6.

As previously described, and having reference to Figs. 5, 6 and 7, with the key 18 in the lock 16, and with a coin C in the coin-receiving passage 42, the key 18 can be turned to lock the locker, the coin C being at this time positioned in the dotted line position shown in Fig. 6 by the lug 49 of arm 50.

Once the locker is locked, in the manner described, the user having previously put his baggage or articles to be stored in the lockers, the key is removed by the user of the locker. Upon removal of the key 18 from the lock 16, the rod 80 moves inwardly in the bore 82 under the action of spring 88, to move arm 50 and lug 48 to the chain-dotted position of Fig. 6. This allows coin C to drop downwardly by gravity in the coin passage 42 until it strikes the shoulder 60 on finger 58. Thus, the coin C is stored in the lock mechanism in the chain-dotted position shown in Fig. 6 during the time that the user of the locker has the key 18 in his possession.

Upon the return to the locker, by the user of the locker, he will reinsert key 18 in the lock 16, the end of the key engaging rod 80 to move it outwardly in bore 82 against the tension in spring 88 to return the arm 50, finger 58, etc., to the full line position of Fig. 6. This allows the coin C to then drop into a coin receiving box inside the locker, if the locker is of the type for which a charge is made, and if it is of the type where the coin will be returned to the user of the locker, then the coin C is directed out to the front of the locker in a suitable chute (not shown) and returned to the user.

Some department stores, and other similar businesses, like to provide their customers with storage lockers which are coin-operated but in which the coin is returned to the use of the locker after use of the locker. The lock mechanism of the present invention is particularly adapted to perform this function, all in the manner described.

Once the user of the locker has returned the key 18 to the lock 16, he can turn the barrel 22 in the reverse direction to which it was turned to lock the locker and return the keeper portion 34 of the latch member 30 to the position shown in Fig. 4 whereupon the locker can be opened.

The lock of the present invention is likewise adapted to operation by means of a plurality of coins, usually of the same denomination. This form of the invention is illustrated in Fig. 8 from which it will be seen that it is only necessary to lengthen the arm 50, which in Fig. 8 has been designated as 50*a* and to lengthen the coin-receiving chute 42*a* so that window or opening 62*a* is spaced a selected plurality of coins, for example, two as shown, from the lug 49*a* whereby a plurality of coins C*a* are stacked in the coin-receiving chute between the lug 49*a* which arrests the movement of the coins through the chute and the window 62*a*.

The apparatus of Fig. 8 operates exactly in the manner heretofore described and includes a catch 64*a* associated with the window opening 62*a*, a rod 80*a* loosely carried on flange 84*a* of the arm 50*a*, the notch 54*a* in the plate 46*a* and through which the lug 49*a* operates, all in the manner previously described. Thus, it is a relatively simple matter to adapt the apparatus of Figs. 1 to 7 so that in order to have it operate a plurality of coins, usually of the same denominations, must be inserted through the coin-receiving slot.

While several complete embodiments of the invention have been disclosed herein, it will be appreciated that modification of these particular embodiments of the invention may be resorted to without departing from the scope of the invention as defined in the appended claims.

I claim:

1. A coin and key operated lock including a channel, a coin receiving chute, mounted on the channel and adapted to receive a coin through a slot in the channel, an arm pivotally associated with the chute, a lug on the arm stopping movement of a coin through the chute, a lock having a rotary barrel mounted on the channel, a key for the lock, a rod on the arm and extending into a bore in the lock and into engagement with the end of the key, spring means tending to move the arm towards the lock so that when the key is removed, the arm swings to move the lug out of the coin chute, a finger carried by the arm and having a shoulder movable to a position to restrict the movement of a coin through the chute near the bottom thereof when the key is removed, a latch member secured to the lock barrel, a pawl pivotally mounted on the latch member and extending into a window opening in the coin chute opposite the position a coin is stopped by the lug, a catch on the side of the window opening and engaging a notch in the pawl to prevent rotation of the latch member when no coin is present behind the window, but with the pawl end striking the coin when one is present and lifting the notch of the pawl

over the catch, and a keeper portion on the latch member and extending through an opening in the channel when the lock barrel is turned.

2. A coin and key operated lock including a coin receiving chute adapted to receive a coin through a slot, an arm pivotally associated with the chute, a lug on the arm in the path of movement of a coin through the chute, a lock having a rotatable barrel with a key passage axial thereof and extending entirely therethrough, a key insertable in said key passage for rotating said barrel, a rod mounted on said arm and extending into said key passage in the lock barrel and into engagement with the end of the key, spring means tending to move the arm towards the lock so that when the key is removed, the arm swings to move the lug out of the coin chute, a finger carried by the arm and having a shoulder movable to a position to restrict the movement of a coin through the chute near the bottom thereof when the key is removed, a latch member secured to the lock barrel and rotatable therewith, a pawl pivotally mounted on the latch member and extending into a window opening in the coin chute opposite the position a coin is stopped by the lug, a catch on the side of the window opening and engaging a notch in the pawl to prevent rotation of the latch member when no coin is present behind the window, but with the pawl end striking the coin when one is present and lifting the notch of the pawl over the catch, and a keeper portion on the latch member.

3. A coin and key operated lock including a coin receiving chute adapted to receive a coin through a slot, an arm movably associated with the chute, a lug on the arm in the path of movement of a coin through the chute, a lock having a rotatable barrel with a key passage axial thereof and extending entirely therethrough, a key insertable in said key passage for rotating said barrel, a rod mounted on said arm and extending into said key passage in the lock and into engagement with the end of the key, spring means tending to move the arm towards the lock so that when the key is removed, the arm moves to move the lug out of the coin chute, a finger carried by the arm and having a shoulder movable to a position to restrict the movement of a coin through the chute near the bottom thereof when the key is removed, a latch member secured to the lock barrel and rotatable therewith, a pawl pivotally mounted on the latch member and extending into a window opening in the coin chute opposite the position a coin is stopped by the lug, a catch on the side of the window opening and engaging a notch in the pawl to prevent rotation of the latch member when no coin is present behind the window, but with the pawl end striking the coin when one is present and lifting the notch of the pawl over the catch, and a keeper portion on the latch member.

4. A coin and key operated lock including a coin receiving chute adapted to receive a coin through a slot, an arm movably associated with the chute, a lug on the arm in the path of movement of a coin through the chute, a lock having a rotatable barrel with a key passage axial thereof and extending entirely therethrough, a key insertable in said key passage for rotating said barrel, a rod mounted on said arm and extending into said key passage in the lock and into engagement with the end of the key, spring means tending to move the arm towards the lock so that when the key is removed, the arm moves to move the lug out of the coin chute, a latch member secured to the lock barrel and rotatable therewith, a pawl pivotally mounted on the latch member and extending into a window opening in the coin chute opposite the position a coin is stopped by the lug, a catch on the side of the window opening and engaging a notch in the pawl to prevent rotation of the latch member when no coin is present behind the window, but with the pawl end striking the coin when one is present and lifting the notch of the pawl over the catch, and a keeper portion on the latch member.

5. In a coin and key operated lock assembly for lockers and the like, the combination of a lock having a rotary barrel, a key for the lock, a latch member secured to the rotary barrel and rotatable therewith, said barrel having a substantially axial opening at the end thereof remote from the end in which the key is inserted, a rod positioned in the axial opening and movable by said key, a coin receiving chute, an arm pivotally suspended adjacent said chute, a plurality of lugs on said arm in succession along said chute and alternately movable thereby into the path of a coin in said chute, said arm being connected to said rod and movable thereby when a key is inserted in said lock, resilient means tending to move the rod into the barrel of the lock so that when the key is in the lock the first of said lugs is positioned in the chute and a second of said lugs is moved out of said chute and, when the key is removed, the rod moves farther into the barrel and the first of said lugs moves out and the second of said lugs moves into the chute, a pawl carried by the latch member, a window in the coin chute through which the pawl extends, the window being positioned opposite the point a coin is stopped by the first of said lugs and a catch on said chute engaging a shoulder on said pawl for locking the pawl when no coin is present at the window and said pawl being disengaged from said catch by presence of a coin at said window.

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