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Krise

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[54] **COIN BOX AND LOCK MECHANISM**

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[52] **U.S. Cl.** **109/59,** 109/64, 70/371

[51] **Int. Cl.** **E05g 1/04**

[58] **Field of Search** 109/59, 66, 64, 65, 67, 109/68, 69, 56; 70/371

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Primary Examiner—Dennis L. Taylor

[57] **ABSTRACT**

A tamper-proof coin box and lock mechanism including a container or cylinder having an open end, and an opening into which coins are delivered. A circular cover plate is snugly receivable in the open end and is secured therein by a bolt cooperable with a dependent bracket on the cover plate and a nut fixed within the cylinder. A key operated lock including a removable plug is mounted in the cover plate in general alignment with the bolt means to facilitate authorized removal of the bolt means and cover plate after the plug has been removed. The cover plate, dependent bracket, and bolt means are constructed to require a special wrench to prevent unauthorized removal of the bolt means even if the lock plug is removed. In addition, the cover plate and the cylinder are constructed so as to render it virtually impossible to jimmy the cover from the cylinder, and to position the cover within the cylinder for proper cooperation of the parts. Furthermore, the bolt can function to assist in removal of the cover should it jam within the cylinder, and the latter is constructed for easy removal of the coins therein once the cover has been removed.

5 Claims, 7 Drawing Figures

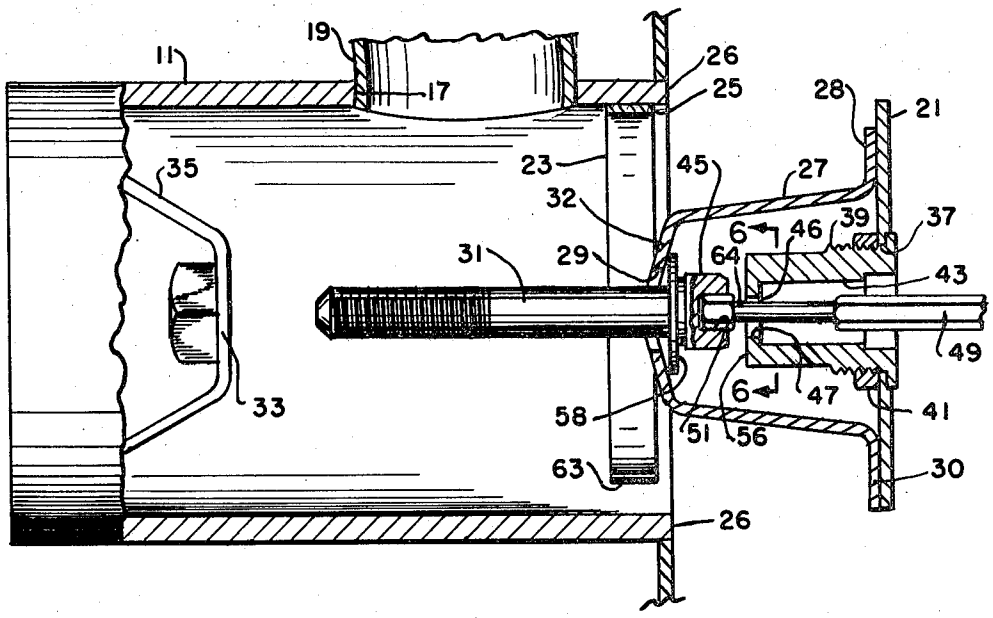


FIG. 1

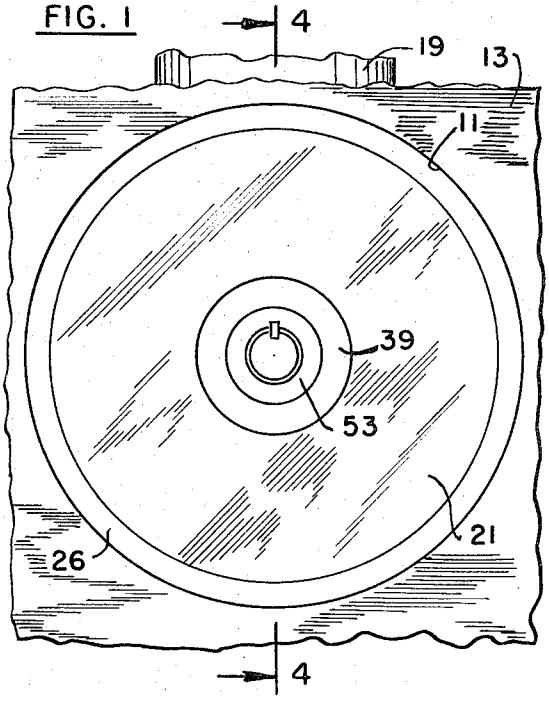


FIG. 3

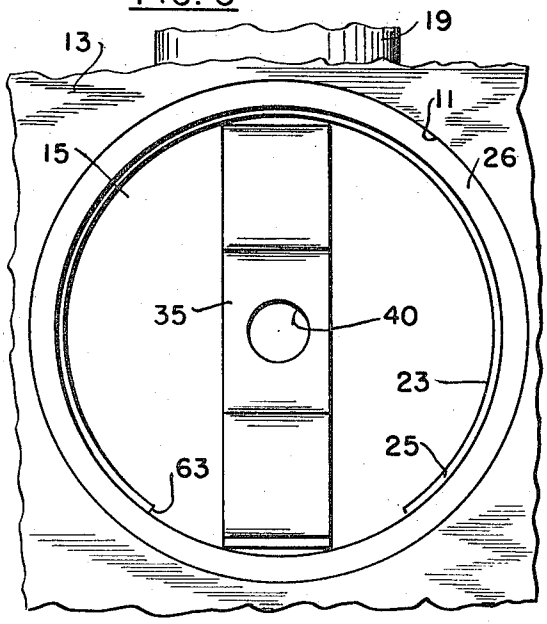


FIG. 2

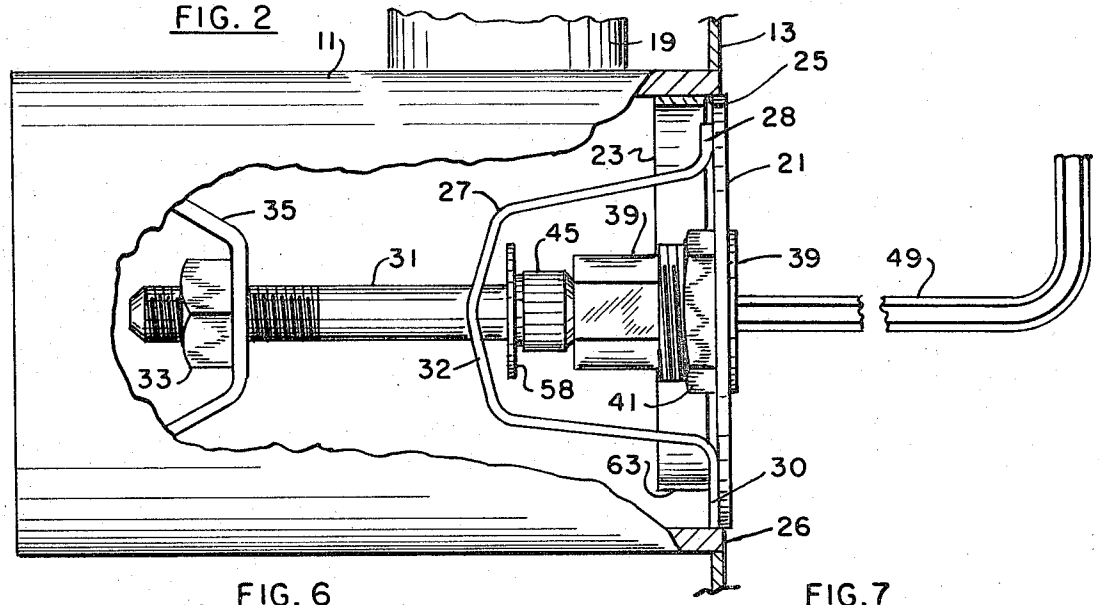


FIG. 6

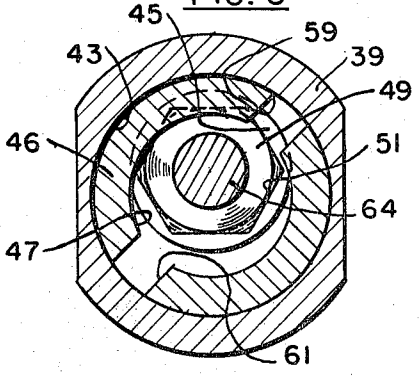


FIG. 7

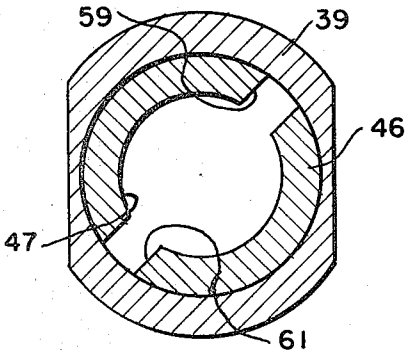


FIG. 4

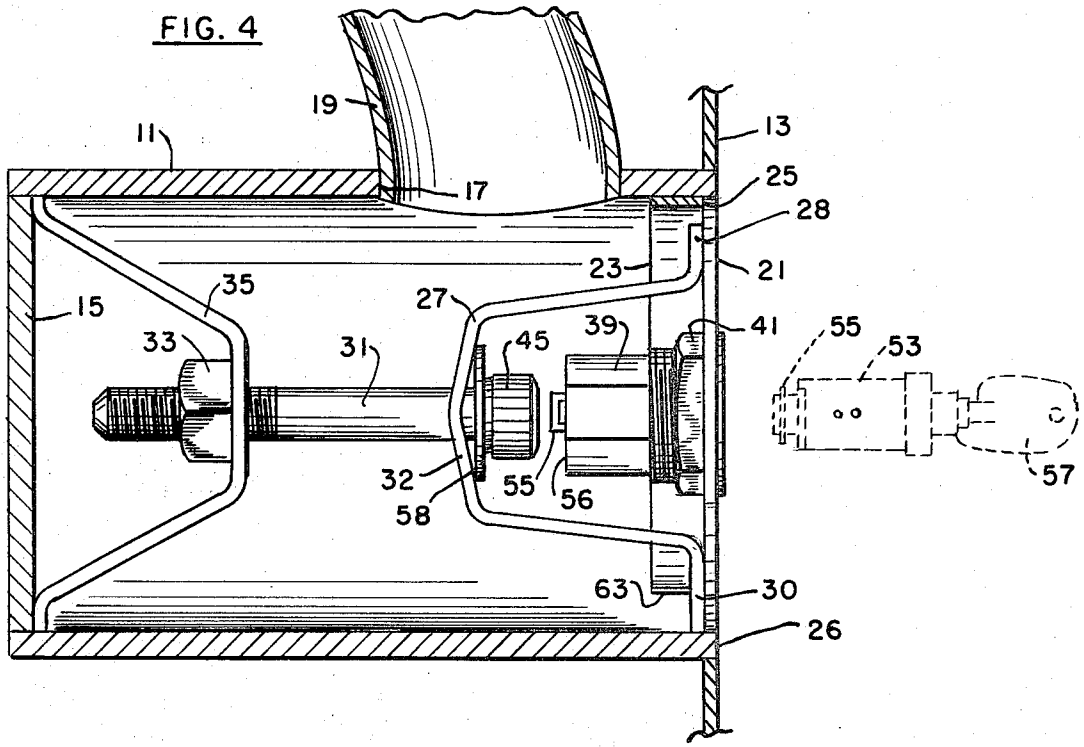
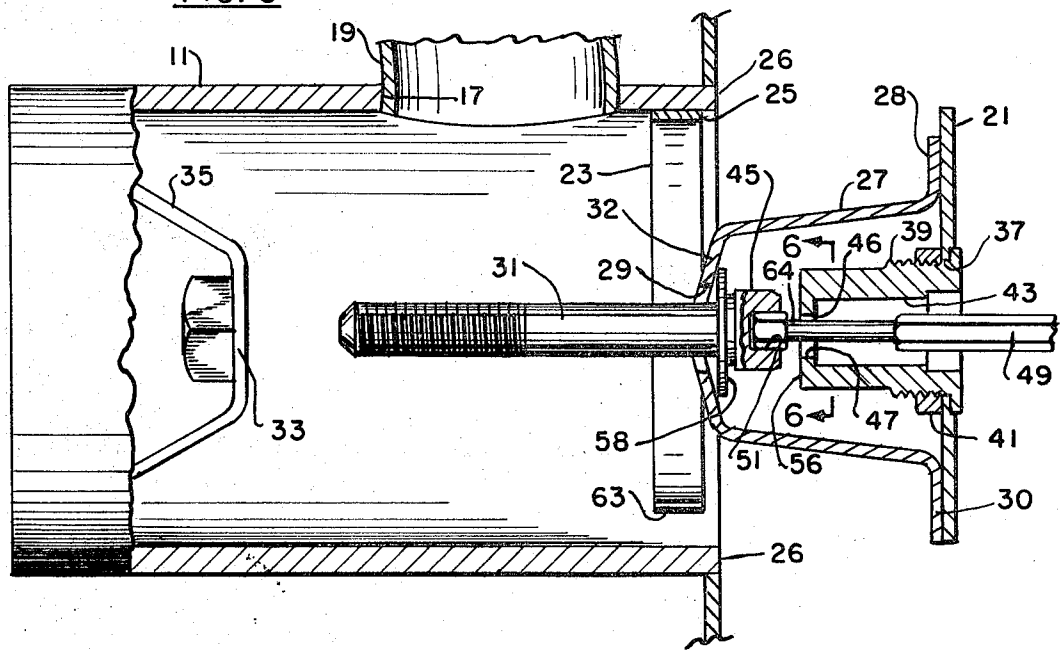

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FIG. 5


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COIN BOX AND LOCK MECHANISM

SUMMARY OF THE INVENTION

The present invention is directed to an improved coin box construction and lock mechanism therefor for use with vending machines and the like, wherein the coin box is rendered virtually jimmy proof and not susceptible to unauthorized opening, but one which facilitates easy opening and withdrawal of coins therefrom by an authorized person having the proper tools. This construction embodies relatively inexpensive component parts but provides a special interfitting relation utilizing a circular cover fitted to a cylindrical and retained therein by a threaded bolt, the latter being covered by a barrel type lock. The construction of and interfitted relationship between the cylinder and the cover prevent the cover from being pried open from the cylinder. The cover is constructed and the bolt arranged so that even upon removal of the lock plug, a specially constructed tool is required to remove the bolt. Furthermore, the parts are constructed so that the bolt can assist in lifting the cover from the cylinder should they become jammed.

The main objects, therefore, of the present invention are to provide an improved coin box construction and lock mechanism therefor which is tamper-proof and jimmy-proof to those unauthorized to open the same, and yet facilitates easy opening and coin withdrawal by authorized persons having the proper tools.

Further important objects of the present invention are to provide an improved coin box construction of the above character which is relatively simple and inexpensive and yet is reliable and burglar proof, and one which provides a built-in means allowing the authorized user to remove the cover should it become jammed in the cion box.

Other objects and advantages of the present invention will become more apparent from a consideration of the detailed description to follow taken in conjunction with the drawings annexed hereto.

BRIEF DESCRIPTION OF THE DRAWING

FIG. 1 is a front elevational view showing a coin box and cover embodying the present invention;

FIG. 2 is a side view, partly in elevation and partly in section, showing the coin box and bolt removing tool, which the parts in position for lifting a jammed coin box cover;

FIG. 3 is a view similar to FIG. 1 and showing the cover removed and the locking bolt withdrawn;

FIG. 4 is a sectional view of the construction of FIG. 1, taken along the line 4—4 thereof and shown with the lock plug withdrawn and in phantom;

FIG. 5 is a view similar to FIg. 4 and showing a special designed wrench in place for removal of the locking bolt and the cover partially withdrawn from the cylinder;

FIG. 6 is an enlarged sectional view of FIG. 5 taken along the line 6—6 thereof; and

FIG. 7 is a view similar to FIG. 6 and showing the locking bolt and wrench removed.

DETAILED DESCRIPTION

Referring now more specifically to the drawings, a coin box construction and lock mechanism embodying the present invention is seen to include a horizontally disposed coil receiver or cylinder 11 secured at its forward end to a vertical wall 13 as by welding. Wall 13 can be, for example, a structural wall of a vending machine or the like. Furthermore, it will be understood that cylinder 11 can be disposed vertically, and can be secured along its top, its sides, its bottom, or at its rear end to a suitable structural frame, and that the manner in which it is disposed and secured is dependent upon the environment in which it is used.

With this in mind, the cylinder 11, desirably formed from steel pipe, may have its rearward end permanently closed by a circular plate 15 also secured in place by welding. The cylinder 11 is provided with an aperture 17 into which one end of a coin chute 19 may be suitably fitted, the other end being connected to a coin receiving device, such as in a vending machine.

The front end of the cylinder 11, shown at the right in FIGS. 2, 4 and 5, forms a cylindrical opening adapted to be closed by a circular cover 21. This cover 21 is desirably constructed of sturdy material such as, for example, steel plate, and is circular in configuration and sized to snugly fit within the open front end of the cylinder 11. An annular stop 23 is secured within the cylinder 11 as by welding, and presents a shoulder 25 against which the cover plate 21 abuts to position the cover 21 substantially flush with the forward face 26 of the cylinder 11.

A generally U-shaped bracket 27 is formed with legs 28, 30 secured to the inner face of the cover plate 21, as by welding, and has a base 32 formed with an elongated central aperture 29. A bolt 31 extends through the aperture 29 and is adapted to threadedly engage a nut 33 welded to the inner side of another U-shaped bracket 35 secured to the bottom plate 15 and cylinder 11 as by welding. The bracket 35 has a central aperture 40 aligned with the nut 33 so that with the cover plate 21 in place within the open front end of the cylinder, the bolt 31 is threaded into the nut 33 and through a bolt head 45 and washer 58 acting on bracket 27, securely draws the cover 21 against the stop shoulder 25. See FIG. 4. Conversely, the cover 21 is removable from the cylinder 11 by threading the bolt 31 out of the nut 33, substantially as shown in FIG. 5. The bolt 31 is turned by means of a specially constructed wrench 49 adapted to fit into a complementary shaped opening 51 in bolt head 45, as will be described.

The cover 21 is substantially centrally apertured at 37 and is fitted with a barrel lock body 39 secured in place by a nut 41. See FIG. 5. The body 39 is substantially centrally apertured at 43 in alignment with the bolt head 45. The inner end of lock body 39 has an inwardly directed flange 46 forming a reduced opening 47.

The lock also includes a plug 53 adapted to fit within the opening 43 of the lock body 39. The plug 53 has a lock bar 55 adapted to fit through diametral slots 59, 61 in the flange 46, and the bar 55 is turnable to engage the inner face 56 of lock body 39. The lock bar 55 is selectively turnable in the usual fashion by a key 57 to unlock or lock plug 53 in lock body 39 by aligning or misaligning the bar 55 with radial slots 59, 61 in the body 39. Thus, when the lock plug 53 is inserted into the lock body opening 43 and the bar 55 inserted through diametral slots 59, 61, and the key 57 thereafter operated to turn the bar 55 out of alignment with the slots 59, 61, the lock plug is firmly retained in place and prevents removal of the bolt 31 from the nut 33, and the cover 21 from the cylinder 11. However, upon

removal of the lock plug **53** from the body **39**, the bolt head **45** becomes accessible to the wrench **49** from outside the cover **21**.

As shown in FIGS. **4** and **5**, the base **32** of the bracket **27** is substantially V-shaped, and the opening **29** is somewhat elongated. The relatively large washer **58** surrounding the bolt **31** between the bracket base and the head **45** allows the bolt **31** to float before threaded engagement with the nut **33** so that the wrench **49** can easily be positioned in opening **56**. However, it will be appreciated that when the cover **21** begins to be tightly drawn against the stop shoulder **25**, the bolt **31** is caused to center with respect to the V-shaped bracket base **32** through engagement of the washer **59** and base. this "centered" relationship of the bolt **31**, as shown in FIGS. **2**, **4** and **5**, causes the bolt head **45** and wrench receiving opening **51** to slightly misalign with the restricted body opening **47**. See FIG. **6**. In order to gain access to the "misaligned" bolt head opening **51** then, the wrench **49** need be shaped as shown in FIG. **5** wherein it is illustrated as ground down at **64**. Thus, a standard wrench sized to fit into the bolt head aperture **51** cannot pass the restricted opening **47** in the body **39** since that opening is slightly misaligned and overlaps with the bolt head opening **51**. It will be appreciated then that even if an unauthorized user can remove the lock plug **53** from the body **39**, he cannot, using a standard wrench, remove the bolt **31** and therefore cannot remove the cover **21**.

Another important feature of this invention resides in the stop **23** which accurately locates the cover plate **21** flush with the front surface of the cylinder **11** and provides a solid backing for the cover **21** in the assembled position. The stop **23** eliminates any possibility that a jimmy type tool can be inserted between the cover **21** and the cylinder **11** to pry the cover open. Desirably, the stop **23** is interrupted at the lower portion of the cylinder **11** as shown at **63** so that when the cover **21** is removed from the cylinder **11**, coins within the cylinder **11** may be easily removed therefrom by the operator inserting his hand into the cylinder **11** and pulling the coins along the bottom wall thereof. As an added feature, the bracket leg **30** extends into this interrupted area **63** of stop **23** to properly position the cover **21** rotatably within the cylinder **11** for the described operation of the bolt **31**. The bracket leg **63** can be designed to substantially fill all the space in the interrupted area of the stop **23**, if desired.

Still further, it will be appreciated that the close fit between the cover **21** and the cylinder **11**, and the complementary circular configuration of these elements, as distinguished from a number of currently used coin box and cover arrangements having a rectangular configuration, provides a coin box and cover construction which is inherently significantly more difficult to prying open. This is so since the rectangular boxes are susceptible to having a corner pried open and the coin therein removed by an unauthorized person. The circular configuration, on the other hand, has no corners and is inherently more resistant to prying open.

Still another feature of the inventive construction shown herein is the fact that should the cover **21** become jammed in the cylinder **11**, the authorized user can, upon removal of the lock plug **53**, insert the properly designed wrench **49** into the bolt head opening **51** and, by unthreading the bolt **31** from the nut **33**, the bolt head **45** comes into engagement with the inner face **56** of the lock body **39**, as shown in FIG. **2**, and serves to jack the cover **21** out of the cylinder **11**.

By the foregoing, there has been disclosed an improved coin box and cover construction calculated to fulfill the inventive objects set forth hereinabove. While a preferred embodiment of the present invention has been set forth and described in detail herein, it will be appreciated that various additions, substitutions, modifications and ommissions may be made thereto without departing from the spirit of the invention.

I claim:

1. A coin box construction comprising a cylinder having a closed and an open end, a circular cover snugly receivable in said open end, stop means within said cylinder and positioning said cover in flush relation with the adjacent end surface of said cylinder, a bolt operatively engageable with said cover and spaced inwardly therefrom and threadedly receivable in nut means fixed to said cylinder, said bolt having a wrench receiving head, said cover having an aperture in general alignment with said bolt and permitting access to said wrench receiving head by a wrench from outside said cover, means on said cover adjacent said aperture forming an obstruction to free removal of said bolt through said aperture, lock means including a body fixed to said cover and a portion removably securable thereto and covering said bolt, said bolt head having a portion engaging said obstruction when said bolt is being unthreaded from said nut means and serving to jack said cover out of said cylinder.

2. A coin box construction comprising a hollow box having an open end, a cover snugly positionable in said open end, said cover having bracket means secured to its inner face and having a tapered portion spaced inwardly from said cover, a bolt extending through an elongated opening in said bracket tapered portion inwardly of said container and threadedly engageable with means fixed to said container, said bolt having a wrench receiving head engaging said tapered bracket portion and causing said bolt head to assume a predetermined radial position with respect to said cover when said bolt is tightened and said cover drawn tightly into said cylinder, said cover having an opening adjacent said bolt, a lock secured to said cover and including a body having a removable, key operated plug receivable in an elongated opening therein, means on said body defining a portion of said opening which is slightly misaligned with respect to said predetermined position to said bolt head and forming an obstruction to access to said wrench receiving head by a standard wrench, a special wrench insertable through said elongated opening when said plug is removed and having an operating end receivable in said wrench receiving head, said special wrench having a reduced diameter portion spaced from said operation end and positioned adjacent said obstruction forming means on said body to permit removal of said bolt only by use of said special wrench.

3. A coin box construction comprising a cylinder having an open end, a circular cover snugly received in said open end, stop means within said cylinder and positioning the outer surface of said cover in flush relation with the adjacent end surface of said cylinder, means fixed to said cover and cooperable with said stop means for rotatably positioning said cover within said cylinder and preventing turning of said cover relative to said cylinder, bolt means engageable with said means on said

cover and spaced inwardly from said cover and threadedly receivable in nut means fixed to said cylinder, said cover having an aperture in general alignment with said bolt means permitting access to said bolt means from outside said cover, and lock means removably securable in said cover aperture and covering said bolt means.

4. A coin box construction comprising a hollow cylindrical box having an open end, an annular stop in said box spaced from said open end, a circular cover snugly positionable in said open end against said stop, said cover having bracket means secured to its inner face and having a portion spaced inwardly from said cover, said bracket means having a portion cooperating with said annular stop to rotatably position said cover in said box and prevent turning of said cover relative to said box, a bolt extending through an elongated opening in said bracket portion inwardly of said box and threadedly engageable with a nut fixed to said box, said bolt having a wrench receiving head engaging said bracket portion, said cover having an opening adjacent said bolt, a lock secured to said cover and including a body having a removable, key operated plug receivable in an elongated opening therein, means on said cover defining an obstruction to access to said wrench receiving head by a standard wrench, a special wrench insertable through said elongated opening when said plug is removed and having an operating head receivable in said wrench receiving head, said special wrench having a reduced diameter portion spaced from said operating end and positioned adjacent said obstruction forming means whereby to permit removal of said cover from said box.

5. A coin box construction comprising a hollow box having an open circular end, an annular stop located within said box and spaced from said open end, said stop having an interrupted portion, a circular cover snugly positionable in said open end against said stop, said cover having means secured to its inner face and cooperable with said interrupted stop to rotatably position said cover in said open end, and prevent turning of said cover relative to said box, a bracket carried by said cover and spaced from its inner face, a bolt extending through an opening in said bracket and threadedly engageable with a nut fixed to said container, said bolt having a wrench receiving head, a lock secured to said cover and including a body having a removable, key operated plug receivable in an elongated opening therein, said elongated opening being generally aligned with said bolt receiving head, whereby said bolt may be removed from said nut and said cover from said box by a wrench inserted through said elongated opening.

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