March 8, 1966 D. J. McGOLDRICK 3,239,046

COIN COLLECTING MECHANISM

Filed April 8, 1964 2 Sheets-Sheet 1

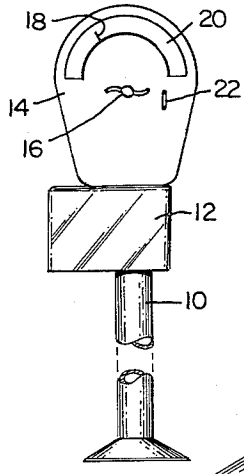


FIG.1

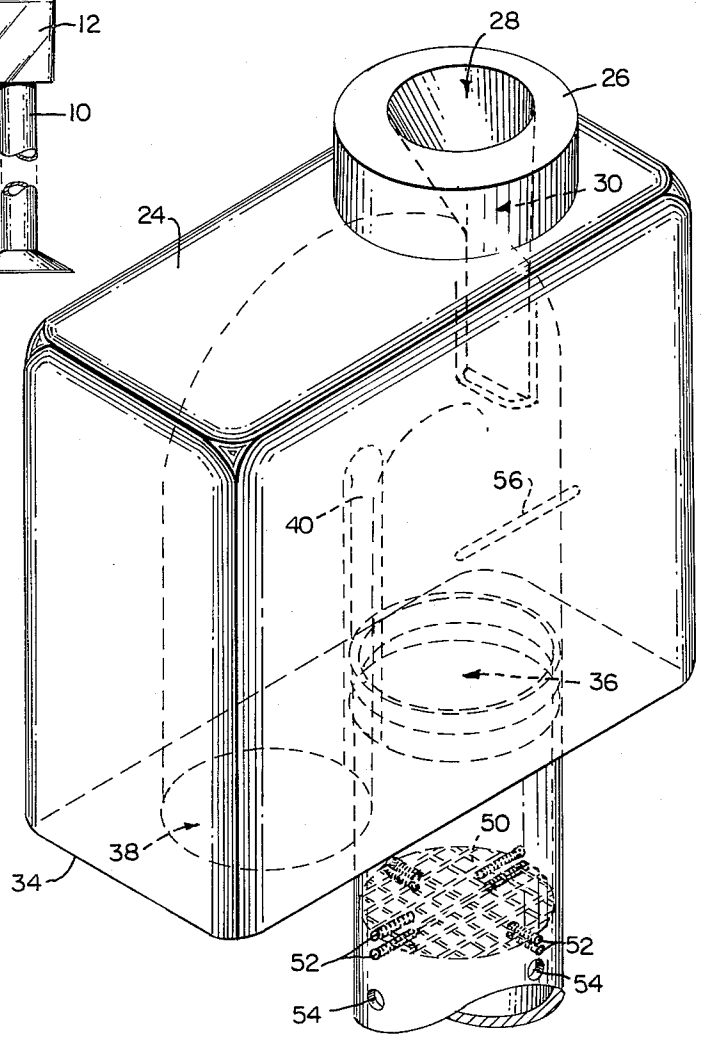


FIG.2

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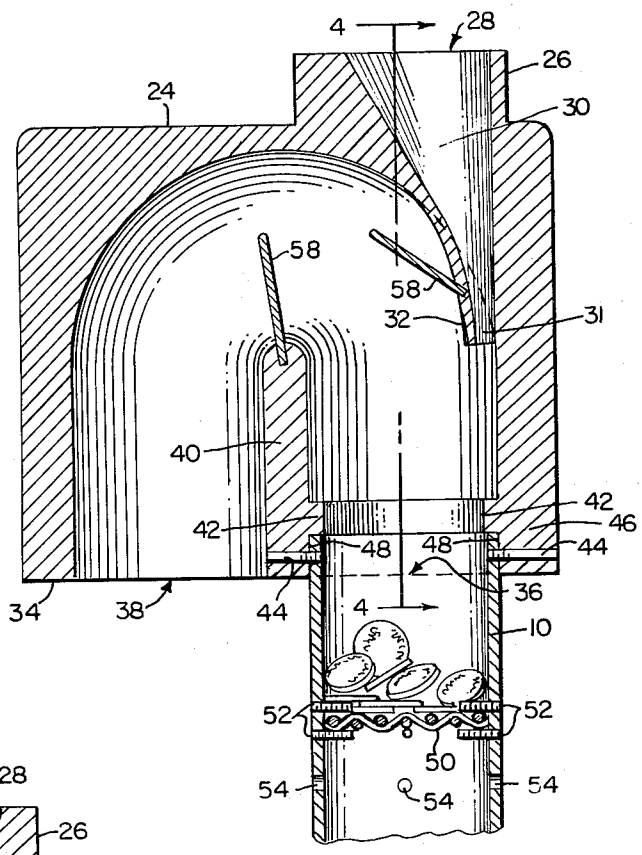
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COIN COLLECTING MECHANISM

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FIG. 3



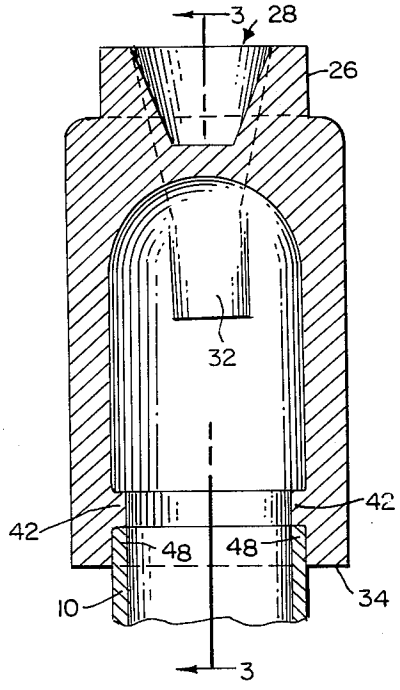


FIG. 4

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COIN COLLECTING MECHANISM

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15 Claims. (Cl. 194—1)

This application relates to coin operated devices such as a parking meter and more particularly to improved means for safely storing the accumulation of coins in a parking meter and quickly withdrawing said coins therefrom.

The conventional type of parking meter has a meter head mounted on a hollow steel stanchion. The meter head contains a timing mechanism, a visual indicator of the time remaining before violation, a coin deposit slot, a hollow coin receptacle portion in which the deposited coins accumulate and a lockable access door located adjacent the coin receptacle through which the coins are removed by the proper authorities.

One major problem has hampered the successful operation of parking meter programs, especially in the larger cities. This problem is the looting of parking meters by thieves. There are two methods which are favored by thieves for this purpose. The first is simply the prying open of the access door with a screwdriver or chisel after which the coins can be scooped up. The second is more sophisticated and involves the use of an unauthorized key. Such a key can be obtained by a thief by hacksawing a meter head off a stanchion after which a locksmith can make the key in privacy and at leisure. With such a key, it is a simple matter to unlock the access doors of all meters of that type.

The loss of the coins from the meter is not the only consequence of this looting. When an access door is pried open, the meter cannot be used to collect further revenue until the locking mechanism is repaired. Therefore, this further revenue is lost. The repairs to the lock must made by a locksmith in his shop. Therefore, the meter head must be removed and additional revenue is lost during this time. Furthermore, the access door is frequently broken off altogether. It can be seen that the cost of repairs to a broken meter usually exceeds the amount of money pilfered from the meter.

Previous efforts to overcome and solve this problem have chiefly taken the form of providing so-called "vandal-resistant" meters built of extremely heavy materials and having sophisticated locking means designed to resist the efforts of petty thieves using simple tools such as screwdrivers and hammers. Such meters operate on the same basic principle as the conventional meters except in their use of heavy materials and strong locks.

However, vandal-resistant meters, because of their superior strength and locks, have a higher cost than conventional meters and also require the replacement of conventional meters entirely. A municipality considering the installation of many thousands or hundreds of thousands of parking meters as an initial expenditure or as a replacement for its conventional meters, is normally quite reluctant to pay such a large sum of money if there is a less expensive, yet equally safe, alternative for obtaining the desired objective, i.e. meter revenue.

This invention, generally speaking, embodies a coin director housing which is designed to replace the coin receptacle portion of the conventional parking meter head. This coin director housing is adapted to be positioned beneath the meter head on top of the stanchion and has hollow passages formed therein. One passage directs the coins which have been deposited in the meter head coin slot down into the stanchion in which a grating is anchored. Another passage in the coin director housing directs the coins out of the stanchion when a

vacuum inducing air nozzle is inserted therein from the outside. The coin director housing has no moving parts, can be made of ordinary materials and has no doors or locks. It is inexpensive to manufacture and can be used with conventional meters after a simple conversion operation.

Accordingly, it is an object of this invention to provide a parking meter which resists looting yet is relatively inexpensive.

It is a further object of this invention to provide a parking meter, the coin receptacle portion of which has no door, no lock, no moving parts, yet provides protection to the deposited coins therein.

It is a further object of this invention to provide a parking meter in which the coin accumulation can be withdrawn by the proper authorities by means of a high powered vacuum inducing hose and nozzle apparatus without the necessity of first unlocking and opening an access door.

It is a further object of this invention to provide a parking meter which cannot be broken into with hand tools nor by use of a master key.

It is a further object of this invention to provide a coin director housing which can be used with conventional parking meters after modification thereof by sealing the access door and removing the coin receptacle floor.

It is a further object of this invention to provide a parking meter of the class described which can be installed as original equipment.

It is a further object of this invention to provide a coin director housing of the class described which can be used in association with most any coin operated device.

It is a further object of this invention to provide a parking meter which, for practical purposes, can only be looted by hacksawing the meter head and coin director housing off of the stanchion.

Other objects and advantages of this invention will become apparent from a study of the accompanying drawings and descriptive matter in which is illustrated and described a preferred embodiment of the invention.

In the drawings:

FIG. 1 is a simplified perspective view of the parking meter incorporating the invention;

FIG. 2 is a perspective view of the coin director housing with the internal portion thereof in phantom;

FIG. 3 is a view in section of the coin director housnig and stanchion taken along line 3—3 of FIG. 4; and

FIG. 4 is a view in section of the coin director housing taken along line 4—4 of FIG. 3.

Referring now more particularly to the drawings, in which the preferred embodiment is illustrated, it will be seen in FIG. 1 that the parking meter of this invention consists primarily of an upright stanchion **10**, a coin director housing **12** and a meter head **14**.

Stanchion **10** is preferably formed from a hollow steel pipe which is embedded in the sidewalk and often anchored in a concrete block. Stanchion **10** has an open upper end.

Coin director housing **12** is mounted upon stanchion **10** and contains internal passages therein through which deposited coins pass and are withdrawn for coin collecting purposes.

Meter head **14** is of a conventional type having a timing mechanism (not shown) which is adapted to be actuated by turning crank handle **16** which acts also to position an indicator which moves across a scale **20** thereby indicating the time remaining before violation. A coin deposit slot **22** is located on either the face or the back of the meter head and is dimensioned to accept the proper sized coin. The insertion of the coin through the deposit slot **22** and/or its subsequent downward travel is a

pre-requisite to actuation of the timing mechanism by the crank handle **16**.

It will be seen that stanchion **10** and meter head **14**, as just described, are conventional in their construction and need not be described in further detail.

Referring now to FIG. 2, coin director housing **12**, upon which meter head **14** is mounted, is preferably die cast from aluminum or a similar metal in one piece. Alternately, housing **12** could be fabricated by welding or other conventional construction methods. On upper surface **24** of housing **12**, an upstanding neck **26** is formed having a relatively wide mouth **28** and a tapering, downwardly extending throat **30** terminating in a narrow slot **31**, a portion of which is formed by lower lip **32**.

Coin director housing **12** has a lower surface **34** in which is formed a first lower aperture **36** directly beneath slot **31**. A second lower aperture **38** is formed in lower surface **34** and is laterally spaced from first aperture **36**. The two apertures are approximately equal in size.

A hollow inverted U-shaped passageway is formed within coin director housing **12** and connects the two lower apertures **36** and **38**. An upstanding internal mid-wall **40** separates the vertical portions of the inverted U-shaped passageway. It will be seen from FIG. 3 that coins entering mouth **28** will pass downwardly through slot **31**, through first lower aperture **36** and into stanchion **10**. The coins can be withdrawn for collection around the inverted U-shaped passageway and out second lower aperture **38**.

An internal circumferential shoulder **42** is formed within the inverted U-shaped passageway spaced slightly above first lower aperture **36** for the purpose of facilitating the mounting of coin director housing **12** over the top of stanchion **10**. Shoulder **42** serves as a stop member against which the upper rim **48** of stanchion **10** abuts. A plurality of mounting pins **44** is inserted through outer wall **46** and mid-wall **40** to secure stanchion **10** within first lower aperture **36**. It is important to note that the ends of mounting pins **44** are mounted flush with the coin director wall surface and are fixed to the stanchion walls to prevent their unauthorized disengagement therefrom.

Within stanchion **10**, a grate **50** is disposed in a horizontal plane for the purpose of receiving the accumulation of coins dropped through mouth **28** and aperture **36**. The grate **50** is preferably made of mesh screening or can be a perforated disk. The important requirement is that the perforations in grate **50** be smaller than the diameter of the coins resting thereon, yet be large enough to allow free passage of air therethrough. A simple means for securing grate **50** within stanchion **10** is the installation of several machine screws **52** extending into the stanchion above and below grate **50**. The heads of machine screws **52** can be flattened to prevent unauthorized removal thereof. Other means for securing grate **50** include the provision of several crossed pins within the stanchion or other types of inwardly extending projections above and below the grate. Air holes **54** are cut in stanchion **10** below grate **50**.

It will be appreciated that a substantial number of coins can collect upon grate **50** and be safely stored within stanchion **10**. The configuration of the internal passageways of coin director housing **12** prevents a thief from reaching into the stanchion even without the provision of a lockable door over second lower aperture **38**. The stanchion **10** forms a natural protective housing for the coin accumulation and can be effectively entered by unauthorized persons only by laboriously hack-sawing completely through the stanchion. Such a procedure would hardly be practical in view of the time involved and the value of the accumulated coins in a single meter.

Authorized collection of the coin accumulation is accomplished by use of an industrial type high powered vacuum inducing removal means. An example of such a removal means is a five horsepower gasoline engine operated in association with a vacuum cleaner-like mechanism to produce an air flow having a static pressure in excess of seven inches of mercury, i.e. equal to the hydrostatic pressure at a depth of seven inches in a pool of mercury. The vacuum inducing removal means is preferably mounted on a small truck which can be driven from meter to meter. A hose and nozzle is provided for insertion into the parking meter. A strong box is provided as part of the removal means for safe storage of the collected coins.

To remove the accumulation of coins from within stanchion **10**, the nozzle of the coin removal means is inserted into second lower aperture **38**. An air flow is drawn through air holes **54**, upwardly through the perforations in grate **50**, around the inverted U-shaped passageway and downwardly into the nozzle and hose. The velocity of such an induced air flow is sufficient to carry the accumulated coins through the inverted U-shaped passage and out of the second lower aperture **38**, through the hose and into a secure coin receptacle which may take the form of a locked strong box.

The vacuum inducing removal means has not been shown in the drawings as it is preferably a conventional high powered vacuum cleaner-like machine. It should be noted that small portable vacuum cleaners do not create an air flow sufficient to collect the coins.

The above description has been directed to the preferred embodiment shown in the drawings. It will be apparent that a large number of modifications could be made to my invention without departing from the spirit or scope thereof.

In particular, it should be clearly understood that the foregoing specification and drawings simply illustrate and describe a preferred embodiment of a parking meter incorporating my invention. However, my invention can be used with any coin-operated device in which coin collection is necessary. Examples of such coin-operated devices are public telephones, cigarette dispensing machines, soft drink dispensing machines, candy dispensing machines, newspaper dispensing machines, gum dispensing machines and the like.

Furthermore, one important feature of my invention is its adaptability for use with presently installed conventional parking meters. For such use, the conventional meter would first have to be modified. The access door would be sealed closed, as for example by welding, and the floor of the coin receptacle would be removed. The meter head could then be placed over neck **26** and the coin director housing mounted on the stanchion whereby the coins deposited in the coin slot **22** would fall through the removed floor in the coin receptacle and drop downwardly upon grate **50** which is anchored in the stanchion. The coin removal operation would be carried out as described in the preferred embodiment.

The adaptability for use with conventional parking meters would permit a municipality to modify its meters, whether broken or not, to incorporate my invention at a small fraction of the cost of the purchase of vandal-resistant meters.

It should be noted that it is not necessary that grate **50** be inserted within stanchion **10**. If the inverted U-shaped passageway were made somewhat longer than is shown in FIG. 3, it would be possible to place the grate within the lower portion of the U-shaped passageway spaced slightly above aperture **36**. This might be desired, for example, where a solid stanchion **10** is utilized.

It should also be noted that the inverted U-shaped passageway configuration could just as effectively take other serpentine or complex shapes, as for example, a helix. The only requirement is that the shape serve to prevent the insertion of a member, such as a human hand, into the coin receptacle area.

A further variation involves the reduction of the air hole size or number of air holes beneath the grate. This

has the effect of increasing the vacuum requirement necessary to effectuate coin collection. By this means, unauthorized coin removal is further prevented.

The provision of an inwardly extending spoiler finger **56** within the inverted U-shaped passageway might be found beneficial for the purpose of disintegrating extremely large coin masses as they are drawn through the passageway. This would act to speed the collection of coins from the stanchion.

It might be found desirable to insert one or two guard pins within the inverted U-shaped passageway spaced slightly above second lower aperture **38** and/or above first lower aperture **36** for the purpose of impeding the insertion of pilfering apparatus therein. Such guard pins would not obstruct the outward flow of coins but might prove useful in obstructing the use of sophisticated pilfering apparatus. Also, a trapping ledge **58** might be built into the curvature of the passageway to interfere with the insertion of snake-like pilfering apparatus.

It should further be pointed out that to additionally protect my parking meter in accordance with the general theme of security by configuration and simplicity with no moving parts, I also provide the employment of a square or oval pipe (or other non-circular shape) over or in place of the conventional stanchion. Such an employment effectively frustrates a pipe cutter whereby removal of the meter head from the stanchion is prevented.

It will now be appreciated that the preferred embodiment of my invention provides a parking meter which resists pilfering because it has neither of the entry paths of conventional or so-called vandal-resistant meters. That is, the parking meter of my invention has no access door and no lock. Furthermore, because there are no moving parts, repairs should be virtually non-existent and the cost of manufacture likewise low.

Obviously, many modifications and variations of the present invention are possible in light of the above teachings. Therefore, it is to be understood that the invention is not limited in its application to the construction and arrangement of parts specifically described or illustrated, but is to be limited only by the spirit of the invention and the scope of the appended claims.

I claim:

1. A parking meter comprising: an upstanding hollow stanchion having air holes formed in the walls thereof; a horizontally disposed coin accumulating grate anchored within said hollow stanchion above said air holes, said grate having perforations therein to prevent the passage of coins therethrough; a coin director housing mounted atop said hollow stanchion, said coin director including a main body portion with upper and lower surfaces, a first aperture formed in the lower surface of said main body portion into which said stanchion is inserted and secured, a second aperture formed in the lower surface of said main body portion into which a coin collecting nozzle can be inserted, internal walls in said main body portion forming an inverted U-shaped hollow passageway connecting said first and second apertures, a third aperture formed in the upper surface of said main body portion, internal walls in said main body portion forming a channel connecting said third aperture to said inverted U-shaped passageway over said first aperture; and a meter head having a timing mechanism, a visual indicator and a coin deposit slot, said meter head mounted on said coin director housing over said third aperture whereby coins inserted into said coin deposit slot fall into said third aperture and are directed downwardly through said first aperture onto said stanchion grate, and whereby insertion of a coin collecting nozzle into said second aperture through which an air flow is drawn results in the transportation of the accumulated grate-held coins from the stanchion, through the inverted U-shaped passageway and out the coin collecting nozzle into a coin container.

2. The parking meter of claim **1** wherein said channel connecting said third aperture with said inverted U-shaped passageway is provided with a downwardly extending deflecting lip at its lower terminus whereby the movement of coins from the stanchion through the inverted U-shaped passageway is accomplished without disruption thereof by coins entering the channel.

3. The parking meter of claim **1** wherein said coin director housing is constructed from aluminum material.

4. The parking meter of claim **1** wherein said coin director housing is a unitary die cast product.

5. The parking meter of claim **1** further characterized by transverse pins mounted in said inverted U-shaped hollow passageway above said second aperture whereby the introduction of pilfering apparatus is impeded.

6. The parking meter of claim **1** wherein the air flow drawn through said coin collecting nozzle has a static pressure in excess of seven inches of mercury (hydrostatic pressure at corresponding depth in that liquid).

7. The parking meter of claim **1** further characterized by a spoiler finger mounted within said hollow stanchion above said grate to fragment clusters of coins as they are upwardly transported by the air flow.

8. The parking meter of claim **1** wherein said meter head has an integral coin receptacle and a lockable access door, said coin receptacle being floorless to permit the coins to fall therethrough into said coin director housing, and said access door being permanently sealed closed whereby the conventional meter head is converted for use with the coin director housing.

9. A parking meter comprising: an upstanding stanchion; a coin director housing mounted atop said stanchion, said coin director housing having a main body portion with upper and lower surfaces, a lower aperture formed in the lower surface of said main body portion into which a coin collecting nozzle can be inserted, inner walls in said main body portion forming an inverted U-shaped passageway open at one end thereof at said lower aperture and forming at the other end thereof an internal coin receptacle, air holes formed in said main body portion extending between said internal coin receptacle and the exterior of said main body portion, an upper aperture formed in the upper surface of said main body portion, inner walls in said main body portion forming a channel connecting said upper aperture to said inverted U-shaped passageway over said coin receptacle; and a meter head having a timing mechanism, a visual indicator and a coin deposit slot, said meter head mounted on said coin director housing over said upper aperture whereby coins inserted into said coin deposit slot fall into said upper aperture and are directed downwardly into said coin receptacle, and whereby insertion of a coin collecting nozzle into said lower aperture through which an air flow is drawn results in the transportation of the accumulated coins from the coin receptacle, through the inverted U-shaped passageway and out the coin collecting nozzle into a secured container.

10. A parking meter comprising: an upstanding hollow stanchion having a perforated grate horizontally disposed therein and air holes formed in said stanchion below said grate; a coin director housing mounted atop said stanchion, said coin director housing having a first lower stanchion aperture and a second normally open coin-removal aperture, said apertures formed in the exterior surface of said housing; inner walls in said coin director housing forming a hollow passageway connecting said first and second apertures, said hollow stanchion inserted into said first aperture and secured thereto; stationary barrier means employed within said hollow passageway between said second coin-removal aperture and said perforated grate for preventing the passage of pilfering apparatus inserted from the housing exterior through said coin-removal aperture; a third aperture formed in the upper surface of said coin director housing; inner walls in said housing forming a hollow channel connecting said third aperture with said hollow passageway over said grate; and a meter head mounted on said coin director housing over

said third aperture, said meter head having a timing mechanism and a coin deposit slot whereby coins inserted into the coin deposit slot fall into the third aperture, through the first aperture and onto the perforated grate, and whereby insertion of a coin collecting nozzle into the second aperture through which an air flow is drawn results in the transportation of the accumulated coins from the stanchion, through the hollow passageway, out the nozzle into a secured container.

11. The parking meter of claim **10** wherein said barrier means includes a plurality of pins extending into said passageway.

12. The parking meter of claim **10** wherein said barrier means includes a trapping ledge sloping toward said second apparatus with respect to the transverse plane of said passageway.

13. The parking meter of claim **10** wherein said barrier means includes said hollow passageway having a serpentine configuration.

14. The parking meter of claim **10** wherein said barrier means includes said hollow passageway having a constriction therein with a diameter in the range of ¾ to 1½ inches.

15. A coin box for use with a coin-operated device comprising: a coin director housing having a coin-intake aperture and a coin-removal aperture, said coin-intake

aperture positioned to ingest coins deposited into the coin-operated device, said coin-removal aperture located in the housing exterior surface and being normally open, inner walls in said housing forming a serpentine shaped passageway connecting said coin-intake and coin-removal apertures and forming an intermediate internal coin accumulation area, air vents formed in said housing extending between said passageway and the exterior of said housing whereby insertion of a coin-collecting nozzle into said coin-removal aperture through which an air flow is drawn produces the transportation of coins from coin accumulation area through said passageway, through the nozzle and into a secured container.

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