May 1, 1962 C. H. BROWN 3,031,875

MOUNTING MEANS AND LOCK FOR AN APPARATUS CASING

Filed Feb. 18, 1959

Fig. 1.

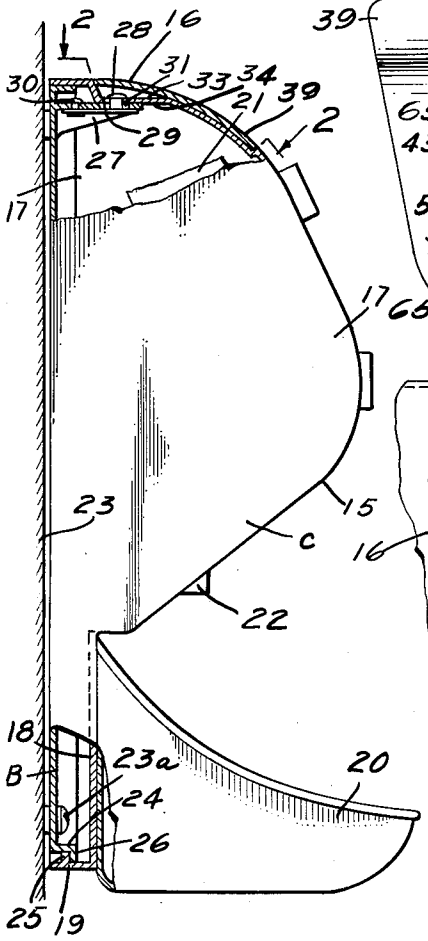


Fig. 3.

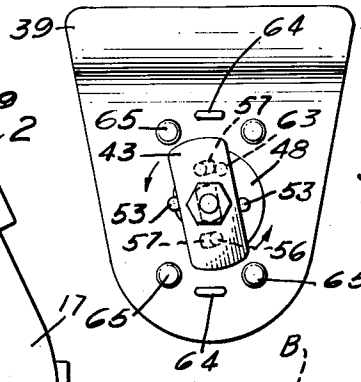


Fig. 4.

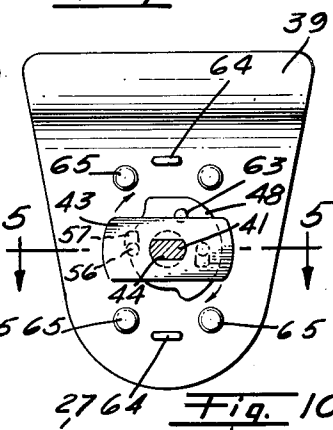


Fig. 2

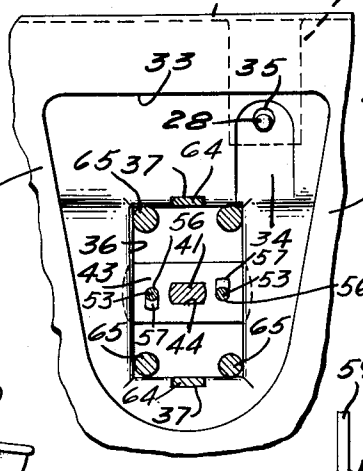


Fig. 10.

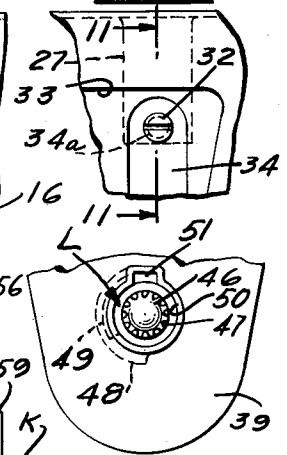


Fig. 6.

Fig. 5

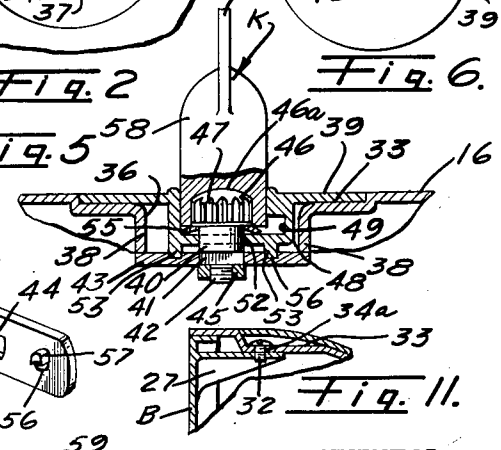


Fig. 11.

Fig. 7.

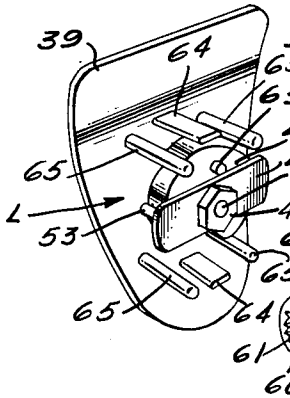


Fig. 8.

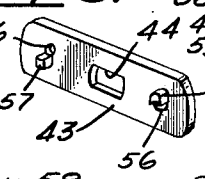


Fig. 9.

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3,031,875
Patented May 1, 1962

3,031,875
MOUNTING MEANS AND LOCK FOR AN APPARATUS CASING

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Filed Feb. 18, 1959, Ser. No. 794,049
7 Claims. (Cl. 70—168)

My invention relates to water-heating apparatus of the character embodied in my copending application Serial No. 694,416, filed November 4, 1957, now Patent No. 2,894,110, and is in part a continuation thereof.

It is a purpose of my invention to provide in an apparatus for heating water and dispensing the same therefrom for use in the making of hot beverages, or an apparatus for any other purpose, that is adapted to be mounted on a wall or other vertical support, and which includes a casing containing the working parts of the apparatus, that is open at its back and closed by a back plate secured to the wall, of means for detachably securing the casing to the back plate which is accessible only through an opening in the casing, a cover member for the opening, and a key-controlled lock for securing the closure member in spanning relation to the opening so that only one possessing the proper key can release the lock and thus remove the cover member to gain access to said means and thereby allow removal of the casing from the back plate, and whereby surreptitious removal and theft of the casing and its contents is prevented.

A further purpose of my invention is the provision in an apparatus of this character in which the means for detachably securing the casing to the back plate includes a latch, or other fastening means, that can be actuated to release and thus allow detachment of the casing from the back plate when it is required to gain access to the working parts contained in the casing for purpose of repair or replacement, and wherein the latch is accessible for release only through the lock-controlled closure member.

It is also a purpose of my invention to provide in an apparatus of this character, a key-actuated lock for the cover member which, while simple and inexpensive to construct, is extremely difficult, if not impossible, to open without use of the proper key, and from which the key can be removed only after actuating the lock to lock the cover member on the casing.

Another purpose of my invention is the provision of a lock for the cover member which includes a shaft that is operable by a key to rotate a locking bar to engaging or disengaging position with respect to a keeper in an opening in the casing to lock or release the cover member within the opening, and wherein the shaft and locking bar are carried by the cover member, and the latter has means thereon for guiding and centering the lock in the opening as it is applied to the casing so that the locking bar when rotated to engaging position will have proper locking engagement with the keeper.

I will describe only one form of mounting means and lock for an apparatus casing embodying my invention, and will then point out the novel features thereof in claims.

In the drawings:

FIG. 1 is a view showing in end elevation and partly in section an apparatus casing and one form of means for mounting the casing on a wall.

FIG. 2 is an enlarged fragmentary sectional view taken on line 2—2 of FIG. 1, and in addition showing the lock for the cover member in section.

FIG. 3 is an inside elevational view of the cover member and the lock, and wherein the locking bar of the lock is shown in released position.

FIG. 4 is a view similar to FIG. 3 but showing the locking bar in locking position and the operating shaft for the bar in section.

FIG. 5 is a horizontal sectional view taken on the line 5—5 of FIG. 4, and with the lock-actuating key in the lock.

FIG. 6 is a fragmentary elevational view showing the outer side of the cover member, the keyhole and the operating shaft.

FIG. 7 is a perspective view of the cover member and lock.

FIG. 8 is a detailed perspective view of the locking bar.

FIG. 9 is a detailed perspective view of the key for the lock.

FIG. 10 is a view similar to FIG. 2 and showing another form of fastening means for securing the casing to the back plate.

FIG. 11 is a sectional view taken on the line 11—11 of FIG. 10.

Referring more particularly to the drawings, in FIG. 1 is shown a casing C which is of the same shape as the casing disclosed in my aforesaid pending application in that it has a front wall **15** curved transversely into a top wall **16**, a pair of end walls **17**, and a vertical back wall **18**, the upper end of which terminates at the lower end of the front wall. The lower end of the vertical wall **18** is formed with a flange **19** which extends at right angles thereto and spans the end walls **17**. Welded or otherwise secured to the front side of the wall **18** is a tray **20** which is coextensive in length with the casing C.

As with the casing of the apparatus of my aforesaid copending application, the casing C is adapted to contain the water tank (not shown) having a filling spout **21** at its top and a discharge spout **22** at its bottom. Also contained in the casing are certain elements (not shown) for electrically heating the water in the tank and a manually operable valve (not shown) for controlling discharge of water from the tank through the spout **22** into a cup which may be placed upon the tray **20** for use when making a hot beverage. As will be understood, these parts are accessible for repair or substitution through the back of the casing C since it is normally open.

The casing C is mountable upon a wall **23** or other vertical support by means of a back plate B which is secured to the wall by screws **23***a* and is of an area to completely close the back of the casing C when the latter is applied thereto. The plate is of rectangular form and provided on all of its edges with coextensive right angular flanges **24** insertable into the casing C as the plate is applied thereto.

For detachably securing the casing C to the back plate B, I provide either the means shown in FIGS. 1 and 2, or the means shown in FIGS. 10 and 11. Both of these means include an upstanding lip **25** on the flange **19** and a depending lip **26** on the bottom flange **24** of the plate B. These two means also include a bracket **27** welded or otherwise secured to the inner side of the plate B adjacent the upper end thereof.

The means shown in FIGS. 1 and 2 includes a latch comprising a pin **28** mounted on a spring **29** riveted as at **30** to the bracket **27**, and the bracket is formed with an opening **31** through which the pin extends. The other means comprises a screw **32** which is threaded into the bracket **27**.

As shown in FIGS. 1 and 2 the top wall **16** of the casing C is formed with a triangular depressed portion **33** directly above the bracket **27**. This portion **33** has fixed thereto a bracket **34** formed with an opening **35** in which the latch pin **28** is received and releasably maintained by the spring **29** so as to secure the brackets **34** and **27** to each other. Thus the upper part of the casing is detachably secured to the back plate B.

As shown in FIGS. 10 and 11, the bracket 34 of the other securing means likewise has an opening 34*a* in which the screw 32 is threadedly received, and which registers with the opening 31 so that the screw when threaded in both openings secures the upper part of the casing to the back plate B.

Whether the latch pin 28 or the screw 32 is employed, the lower part of the casing is detachably secured to the lower end of the back plate through interengagment of the lips 25 and 26 in the manner illustrated in FIG. 1, and so that when either the latch pin 28 is depressed against the tension of the spring 29 to remove it from the opening 35 of the bracket 34, or when the screw 32 is unscrewed from the bracket 34, the casing can be removed from the back plate by swinging the top of the casing downwardly until the lip 25 disengages the lip 26.

As best shown in FIG. 2, the top wall 16 of the casing to one side of the bracket 27 is formed with an opening 36 rectangular in form and at its opposite ends provided with recesses 37. This opening 36 is formed in the depressed portion 33 of the casing, and the walls of the opening are provided with downwardly extending flanges 38 (see FIG. 5) which provide a keeper for the bar of a lock to be later described herein. The opening 36 is adapted to be closed by cover member 39 which is in the form of a plate of triangular shape to fit within the depressed portion 33 and curved longitudinally to conform to the curvature of the top wall 16.

This plate 39 carries a lock, generally indicated at L, which is operable by a key K to lock the plate 39 in covering relation to the opening 36 and the latch pin 28 in one instance, or the screw 32 in the other, so that access to neither can be had to effect removal of the casing from the back plate B only when the plate is removed.

The lock, in the present instance, comprises a shaft 40 one end of which is formed with a flattened portion 41, and a screw-threaded stem 42 projecting from the latter. A locking bar 43 is mounted on the flattened portion 41 through the provision of a slot 44 which receives the latter, and a nut 45 threaded on the stem 42 for clamping the bar to the shaft. The other end of the shaft is formed with a head 46 which has a rounded top 46*a* and annular series of peripheral teeth 47.

The aforesaid described parts of the lock are associated with the plate 39 in the manner best illustrated in FIG. 5 wherein it will be seen that the plate at its center is formed on its inner side with a member 48 which is hollow to provide an arcuate channel 49 concentric to a circular keyhole 50 which extends through the plate 39 and has a recess 51 radially therein. The bottom wall of the member 48 is formed with an opening 52 smaller than the hole 50 and concentric thereto, and the bottom side of said wall is formed with a pair of pins 53.

The shaft 40 is rotatably mounted in the opening 52 with the head 46 in the keyhole 50, and as the locking bar 43 is secured to the shaft it is disposed at the inner edges of the flanges 38. A leaf spring 55 of arcuate form is mounted on the shaft 40 just beneath the head 46 so as to rest on the bottom wall of the member 48. This spring functions to urge the shaft upwardly in the member 48 to a position in which the locking bar 43 engages the inner edges of the keeper flanges 38 when the bar is in the locking position shown in FIGS. 4 and 5.

In such locking position of the bar 43 it is retained through a pair of recesses 56 and a pair of pins 57 adjacent the recesses, all formed on the upper side of the bar at points such that the pins 53 on the member 48 are received in the recesses so as to abut the pins 57, thus securing the bar as well as the shaft 40 against turning in either direction, and thus the plate 39 is locked against removal from the casing.

The key K comprises a shank 58 formed at one end with a handle 59, and at the other end with a socket 60 the wall of which is formed with an annular series of teeth 61. On the shank 58 adjacent the socket 60 is a pin 62.

The key is applied to the lock for operation thereof by first positioning it circumferentially so that the pin 62 is opposite the recess 51 when both the pin and socket 60 can be inserted into the keyhole 50 and the socket onto the head 46 so as to cause the teeth 61 to mesh with the teeth 47 to permit turning of the shaft 40 by the key.

It will be noted that the head 46 is countersunk with respect to the top of the keyhole 50, and that the top 46*a* is rounded. As a result the shaft cannot be gripped and turned by a pair of pliers or any other tool to release the lock and thus surreptitiously remove the plate 39 to gain access to either the pin 28 or the screw 32 and thereby detach the casing from the back plate.

In the operation of the lock to release the cover plate 39, the key with the pin 62 registering with the recess 51, is inserted into the keyhole to cause intermeshing of the teeth 47 and 61, whereupon the key is forced axially downward against the tension of the spring 55 thereby moving the shaft 40 downwardly and causing the bar 43 to be lowered out of engagement with the pins 53, and thus freeing the bar from turning by the key.

By now rotating the key a half turn and in a clockwise direction as when viewed in FIG. 4, during which the pin 62 moves along the channel 49, the shaft is caused to rotate in the same direction and with it the locking bar until the bar occupies the released or unlocked position shown in FIG. 3. In this position of the bar 43, it is out of engagement with the flanges 38 and thus the plate 39 is released to permit it to be removed from the casing.

By a pin 63 fixed on the bottom of the member 48 the locking bar is limited in its turning movement to the unlocked position shown in FIG. 3 since the pin is in the path of movement of one of the bar pins 57 to be engaged thereby. Also, since the pin 62 is within the channel 49 during rotation of the locking bar to unlocked position, the key cannot be withdrawn from the keyhole. Only when the locking bar is restored to locking position by reverse rotation of the key to bring the pin 62 into registry with the recess 51 can the key be withdrawn from the keyhole.

To facilitate insertion and proper positioning of the lock within the opening 36, so that it will function as intended, the plate 39 has fixed on its inner side a pair of flat tongues 64 and four round fingers 65 rectangularly arranged thereon. The tongues 64 are receivable in the recesses 37 as the plate is applied to the casing, while the fingers 65 are received in the corners of the opening 36, all as illustrated in FIG. 2.

The fingers 65 serve to guide the lock into the opening 36 and center it so that the tongues 64 will pass into the recesses 37. In their final positions the tongues and fingers secure the plate 39 against any turning movement on the casing as well as prying of the plate off of the casing.

Although I have herein shown and described only one form of mounting means and lock for an apparatus casing, it is to be understood that various changes and modifications may be made herein without departing from the spirit of my invention and the spirit and scope of the appended claims.

What I claim is:

1. In combination: a casing, the rear side of which is open; a plate for closing said side; means covered by the casing for securing the plate to a wall; coacting means on the casing and plate for detachably securing the casing to the plate; said coacting means comprising interengaging elements on the confronting sides of the casing and plate for securing the lower ends of the casing and plate to each other, said elements being disengageable from each other by swinging movement of the casing outwardly and downward away from the plate, fastening means for securing the top portions of the casing and plate to each other against swinging the casing outwardly and downward away from the plate; said fastening means accessible

from the exterior of the casing to release the top portion of the casing; a cover on the casing for the fastening means; and a key-controlled lock for securing the cover to the casing.

2. A combination as embodied in claim 1, wherein the fastening means comprises a latch pin on the first-mentioned plate spring pressed into an opening in the casing.

3. In combination: a plate having a keyhole therein formed with a peripheral recess; a member fixed to one side of the plate and formed with an opening leading to the keyhole; a shaft journaled in the member and also movable axially therein; a head fixed to one end of the shaft and disposed within the keyhole, said head having teeth thereon; a locking bar fixed to the other end of the shaft for rotation thereby to occupy either of two circumferential positions; a spring on the shaft between the head and the member urging the shaft axially in one direction to move said bar laterally in one direction; coacting means on said bar and the member for locking said bar against rotation from one of said positions, said means effective to lock said bar under the urging action of the spring; and a key extendable into the keyhole and engageable with the teeth of the head and for moving the shaft axially in the other direction against the urging action of the spring to cause said means to release said bar so that it can be turned to the other of said positions through rotation of the shaft by the key while in engagement with the head.

4. A combination as embodied in claim 3, wherein a stop pin is fixed on the member and adapted to be engaged by that part of said coacting means on the bar to limit turning of said bar to said other position.

5. In combination: a casing having an open side and an opening in one wall thereof; spaced flanges on said wall extending inwardly of said opening; a plate for covering said opening; a hollow member fixed to the inner side of the plate and received in said opening; the plate having a keyhole therein leading to the interior of said member; a shaft journaled in said member and extending into the keyhole; a locking bar fixed to the inner end of the shaft for operation by turning of the shaft to engage said flanges so as to lock the plate to the casing, or disengage said flanges thus releasing the plate; a key extendable into the keyhole to engage the shaft for turning the same, said shaft also being movable axially in said member, and that end of the shaft within the keyhole being formed with a toothed head; pins on said member and other pins on said bar, said bar having recesses therein adjacent the pins thereon; and a spring on the shaft for urging the latter axially in the direction of the keyhole, and said bar laterally to a position in which the pins thereon engage the pins on said member, and the latter pins are seated within the recesses, all when said bar is in engagement with said flanges to lock said bar and shaft against turning, said key having an interiorly toothed socket extendable into the keyhole to engage the teeth of said head for turning of the shaft by rotation of the key, the bottom wall of said socket engageable with the end of said head so that pressing the key axially inward of the keyhole said head moves the shaft axially inward against the tension of the spring

to, in turn, move said bar when in engagement with said flanges laterally in the other direction so as to cause the bar-carried pins to be moved out of engagement with the member-carried pins and the latter out of said recesses, thus freeing said bar for rotation by the shaft to rotate said bar out of engagement with said flanges.

6. A combination as embodied in claim 5, wherein the keyhole is formed with a peripheral recess, and said member with an arcuate channel concentric of the keyhole and one end of which opens into the peripheral recess; and a pin on the key extendable into the peripheral recess and into said channel when the key pin is turned by the key for rotation of said bar out of engagement with said flanges, whereby the key pin and said channel coact to maintain the key against removal from the keyhole so long as said bar is out of engagement with said flanges.

7. In combination: a plate having a keyhole therein formed with a peripheral recess; a member fixed to one side of the plate and formed with an opening leading to the keyhole; a shaft journaled in the member and also movable axially therein; a head having teeth fixed to one end of the shaft and disposed within the keyhole; a locking bar fixed to the other end of the shaft for rotation thereby to occupy either of two circumferential positions; a spring on the shaft between the head and the member urging the shaft axially in one direction to move said bar laterally in one direction; coacting means on said bar and the member for locking said bar against rotation from one of said positions, said means effective to lock said bar under the urging action of the spring; a key extendable into the keyhole and engageable with the teeth of the head for moving the shaft axially in the other direction against the urging action of the spring to cause said means to release said bar so that it can be turned to the other of said positions through rotation of the shaft by the key while in engagement with the head; and fingers fixed to the member side of the plate for guiding the member, shaft and locking bar into centered position with respect to an opening and to engage the walls of the opening so as to secure the plate against turning movement relative to the opening.

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