United States Patent [19]

Morgan

[11] **3,758,027**

[45] **Sept. 11, 1973**

[54] **MAILBOX**

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[22] Filed: **July 1, 1971**

[21] Appl. No.: **158,941**

[52] **U.S. Cl.** **232/17,** 232/34, 232/48, 232/53, 232/43.1

[51] **Int. Cl.** **A47g 29/12**

[58] **Field of Search** ..... 232/17, 47, 48, 45, 232/53, 44, 24, 43.1, 4 D, 19, 34

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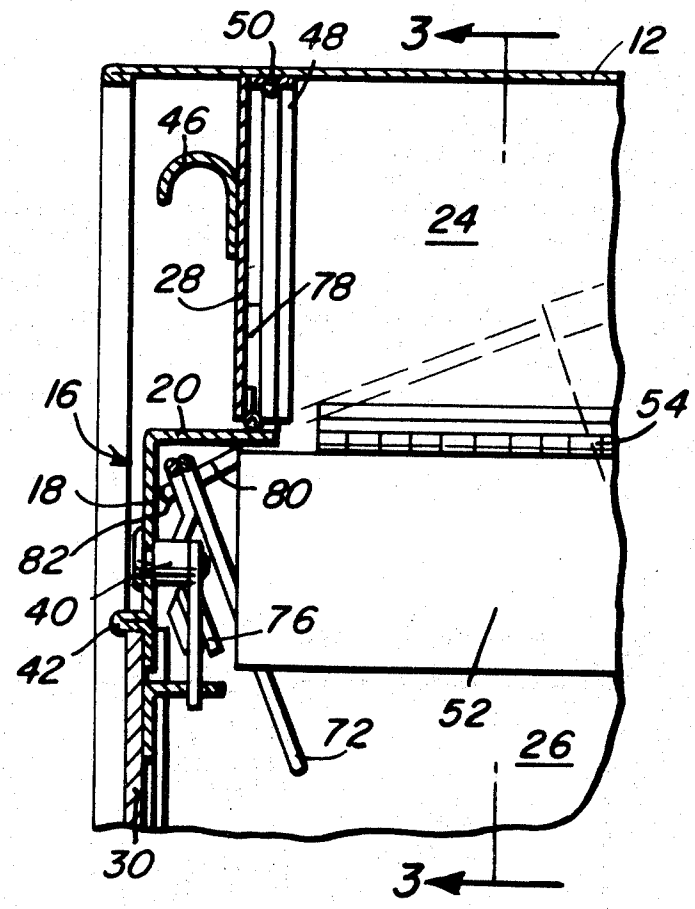
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[57] **ABSTRACT**

A mailbox having upper and lower compartments interconnected by a trapdoor which defines a bottom for the upper compartment when in closed condition. The lower compartment is provided with a lock device so that only authorized persons have access thereto. The upper compartment is provided with a pivotal mounted access door engaged with a mechanism for automatically closing the trapdoor when the access door to the upper compartment is opened and permitting the trapdoor to open when the access door to the upper compartment is closed. A signal flag is mounted on the mailbox for pivotal movement and is associated with the operating mechanism for the trapdoor to retain the trapdoor in closed position while the signal flag is in an upright signalling position.

6 Claims, 7 Drawing Figures



PATENTED SEP 11 1973

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Fig. 1

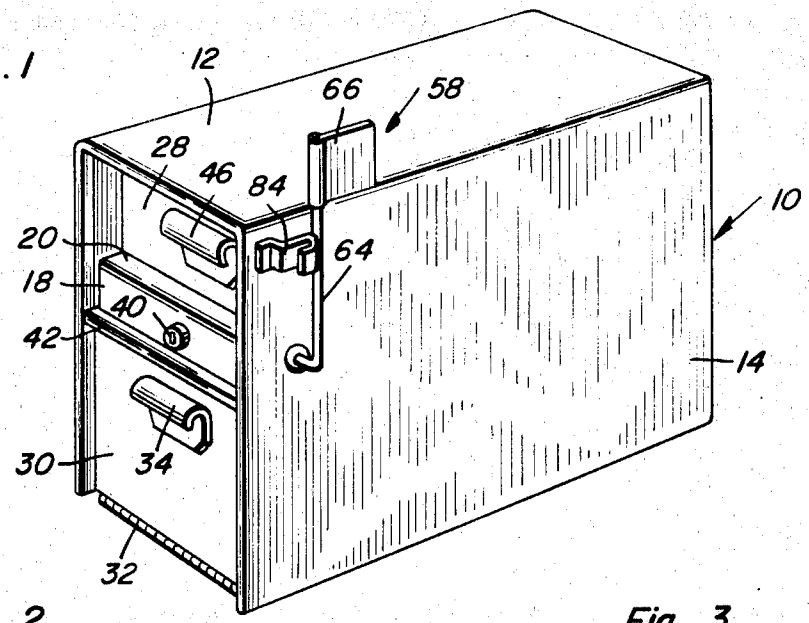


Fig. 2

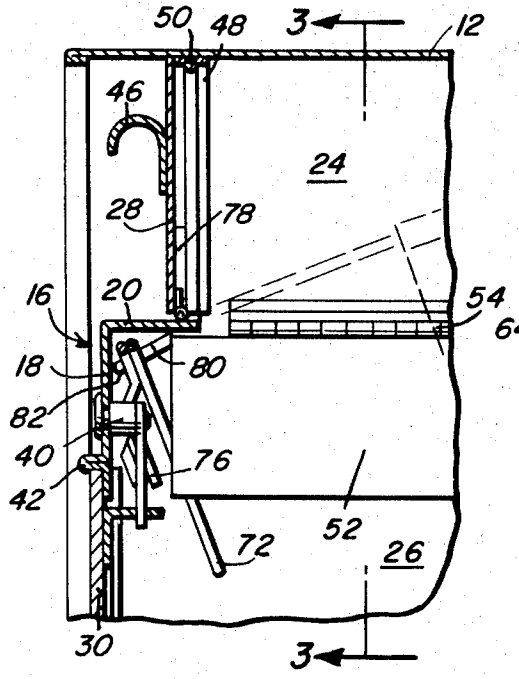
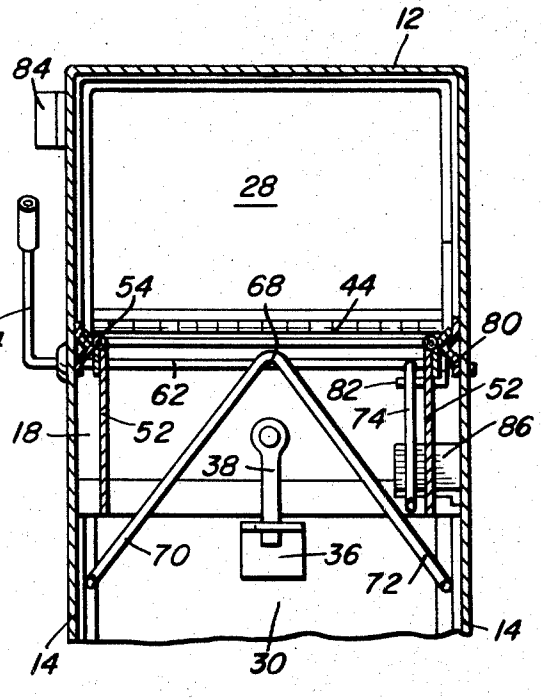


Fig. 3



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Fig. 4

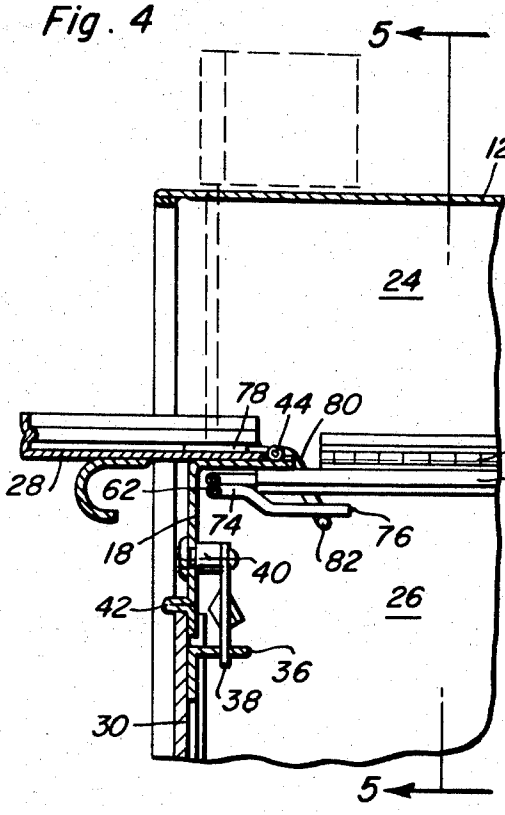


Fig. 5

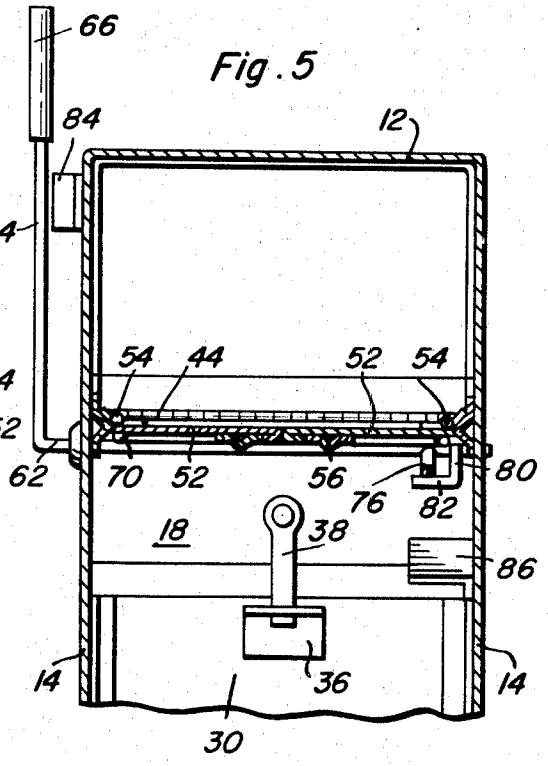


Fig. 6

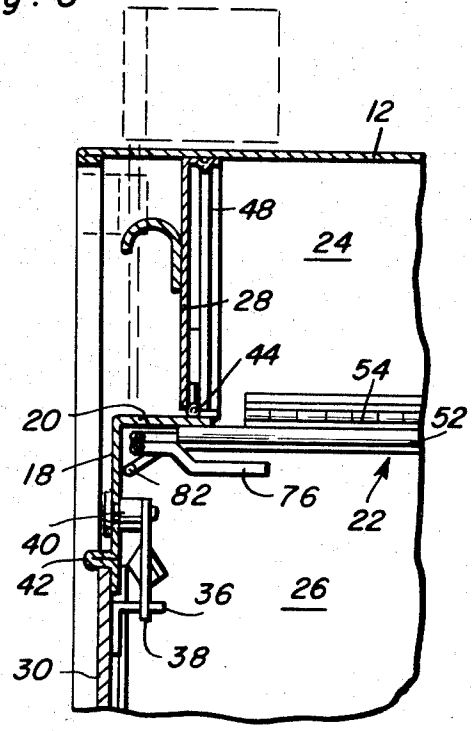
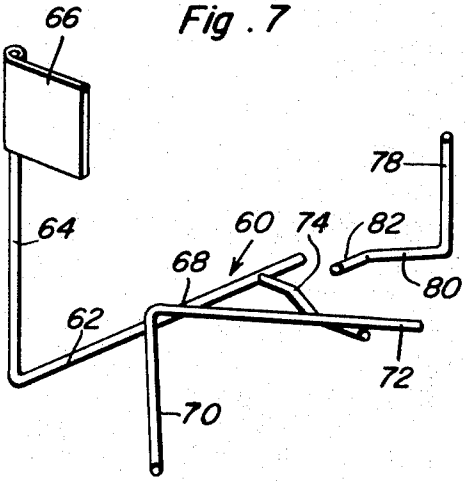


Fig. 7



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MAILBOX

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention generally relates to a receptacle such as a mailbox or other depository in which items are placed through an access door and when the access door is closed, the items are then deposited by gravity into a lower compartment which has a locked access door, thereby enabling all items placed in the depository to be maintained in a security compartment inaccessible to anyone except a person in possession of a key or other means for opening the locked door compartment.

2. Description of the Prior Art

Receptacles, such as mailboxes and other depositories for various items, have been in use for many years but in order for the mailboxes or other depositories to be readily accessible to a delivery person, it has also been accessible to unauthorized persons, thus resulting in substantial loss of mail or other items. Various attempts have been made to provide security for such items in which the items when placed in the depository pass through a trap mechanism into a security area so that the items cannot be returned through the trap mechanism. While such previous devices have been successfully employed in certain installations, they generally have been somewhat complex and relatively expensive to manufacture.

SUMMARY OF THE INVENTION

An object of the present invention is to provide a mailbox or other depository of relatively simple construction but yet dependable and long lasting to enable the device to be economically feasible for use as a mailbox or other depository where items are to be placed and it is desirable to prevent unauthorized persons from having access thereto.

Another object of the invention is to provide a mailbox or other depository in the form of a housing divided by a trapdoor into an upper and lower compartment, with the upper compartment having a pivotal access door and the lower compartment having a lock-equipped access door to provide security for the items in the lower compartment. The trapdoor is gravity opened but moved to a closed position when the access door to the upper compartment is opened so that items may be placed on the closed trapdoor and the closed trapdoor will prevent access to the lower compartment thereby enabling such items to move by gravity through the trapdoor into the lower compartment when the upper compartment door is closed and preventing movement of such items up through the trapdoor inasmuch as opening of the access door to the upper compartment will automatically close the trapdoor.

A further object of the invention is to provide a mailbox or other depository in accordance with the preceding objects in which the housing is provided with a signal flag pivotally attached thereto with the signal flag being related to the trapdoor actuating mechanism in such a manner that when the signal flag is raised to a signalling position, the trapdoor will remain closed thereby enabling items to be picked up by a postman or other designated person to be maintained in the upper compartment so that access may be had thereto by opening the upper compartment access door. When the item is picked up by the postman or some other designated person, the flag would be lowered so that any items placed into the upper compartment by the postman or other person delivering items, such items would then be deposited into the lower security compartment when the upper access door is closed.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a perspective view illustrating the present invention incorporated into a mailbox.

FIG. 2 is a vertical sectional view of the front portion of the mailbox illustrating the structural details of the present invention with the upper access door in closed position and the signalling flag in a retracted position.

FIG. 3 is a transverse, sectional view taken substantially upon the plane passing along section line 3—3 of FIG. 2 illustrating the specific structural details of the mechanism in the condition illustrated in FIG. 2.

FIG. 4 is a vertical sectional view similar to FIG. 2 but illustrating the upper access door in open position and the signal flag in its signalling position.

FIG. 5 is a transverse vertical sectional view taken substantially upon the plane passing along section line 5—5 of FIG. 4 illustrating the orientation of the structure when in the position of FIG. 4.

FIG. 6 is a vertical sectional view similar to FIG. 2 but illustrating the signal flag in signalling position with the trapdoor closed.

FIG. 7 is an exploded group perspective view illustrating the mechanism associated with the door and flag to close the trapdoor.

DESCRIPTION OF THE PREFERRED EMBODIMENT

The invention is disclosed specifically in the embodiment of a mailbox but the structural and functional features thereof may be incorporated into various types of receptacles, depositories, or the like, in which items may be deposited by a delivery man in an area or compartment readily accessible to him and when the door is closed to the delivery compartment, the item will automatically move into a security compartment to prevent unauthorized removal of such items. In its use as a mailbox, where mail is to be picked up by the mailman, a signal flag is moved to a signalling position which retains a trapdoor in closed position so that mail to be picked up is retained in an accessible position to the mailman so that when he opens the access door, he will be able to remove the outgoing mail and place incoming mail in the mailbox which will be dropped into the security compartment when the flag is returned to its retracted position and the access door closed.

The mailbox includes a housing **10** which may be of rectangular configuration of any suitable size and includes a top wall **12**, parallel side walls **14**, a vertical rear wall and a bottom wall, the details of which are not disclosed but which may be of conventional sheet metal construction. The bottom of the housing **10** may be provided with suitable means for mounting on a supporting post, pedestal, or the like, or the device may be mounted in any suitable manner. The particular material from which the mailbox is constructed and the dimensions thereof may vary as long as they comply with all regulations relating to mailboxes. The front of the housing **10** is provided with an L-shaped front wall, generally designated at **16**, and including a vertical front wall portion **18** and a horizontal front wall portion **20** which extends inwardly from the top edge of the

vertical portion **18**, as illustrated in the drawings. Extending generally horizontally in the housing **10** intermediate the top and bottom thereof is a trapdoor, generally designated by the numeral **22**, which divides the housing into an upper compartment or portion **24** and a lower compartment or portion **26** with the trapdoor **22** forming a partition therebetween and a bottom for the upper compartment **24** when in closed condition. A pivotal access door **28** is provided for the front of the upper compartment **24** and a pivotal access door **30** is provided for the lower compartment **26.**

As illustrated in FIG. **1**, the lower access door **30** is hingedly attached along its bottom edge by a hinge **32** for swinging movement about a substantially horizontal axis at the lower corner of the housing **10.** A handle **34** is attached to the outer surface of the access door **30** to enable the door to be pivoted between an open and a closed condition. The handle **34** is in the form of a plate having an outwardly and downwardly curved top edge to provide a generally inverted J-shaped handle. The inner surface of the door **30** is provided with an L-shaped keeper **36** at the upper central edge thereof including a notch or aperture receiving a swingable lock-arm **38** forming a part of a key operated lock mechanism **40** which is mounted in the vertical wall portion **18** with the key receiving slot or recess being exposed for access thereby enabling the door **30** to be locked and unlocked by persons having the appropriate key. As illustrated, the vertical wall portion **18** is provided with an outwardly extending folded flange **42** which overlies the top edge of the door **30** and the inner edge of the flange **42** extends down vertically behind the top edge of the door **30** thereby forming a doorstop with the flange **42** forming an overlying lip for the door **30** to provide rigidity to the vertical wall **18** and also provide a weather seal for the door **30.** Thus, when the lock mechanism **40** is actuated to swing the lock arm **38** upwardly to a generally horizontal position, the door **30** may be opened or closed and when the lock arm **38** is swung to the vertical position in engagement with the notch in the keeper **36,** the door **30** will be retained in locked position so that only those having a key may have access thereto.

The upper compartment **24** is closed or opened by the door **28** which has the lower edge thereof hingedly attached to the forward edge portion of the horizontal inwardly extending wall portion or flange **20** by a hinged structure **44.** Inasmuch as the hinge structure **44** is at the inward edge of the flange **20,** the opening movement of the door **28** is limited to substantially a horizontal position as illustrated in FIG. **4** inasmuch as the door **28** will be resting against the surface of the flange **20** thus forming a limit for downward pivotal movement of the door **28.** This inward offset of the door also provides an additional overhang of the housing **10** in relation to the door **28** to further provide protection from inclimate weather. The outer surface of the door **28** is provided with an inverted J-shaped handle **46** similar to the handle **34** for manipulating the door **28.** Also, the top and two side edges of the door **28** are provided with a peripheral flange **48** thereon which has an inwardly offset peripheral groove **50** formed therein to provide a sealing and frictional engagement with the interior of the housing to retain the closure door **28** in closed position but yet enable it to be easily opened by pulling on the handle **46.** This construction eliminates the necessity of separate friction latches or the like for the door **28** and enables the interior surface of the housing to be smooth, and free of obstructions which could hinder movement of the hand into and out of the compartment **24** such as when placing mail therein or removing mail therefrom.

The trapdoor **22** includes a pair of trapdoor members, flaps or panels **52** which are of substantially identical construction and substantially one half the area of the housing so that when the flaps **52** are in their horizontal positon as illustrated in FIG. **5,** the trapdoor **22** forms a bottom for the compartment **24.** Each flap or trapdoor member **52** is hingedly attached to a corresponding side wall **14** by a hinge structure **54** generally in the form of a piano hinge and which provides very little inward obstruction on the interior of the housing thereby precluding the possiblity of mail becoming lodged on or hung on the hinges **54.** The adjacent facing edges of the panels **52** are reversely folded and provided with a longitudinally extending reinforcing rib **56** to rigidigy the flaps **52** throughout rigidify length. The flap or trapdoor members **52** are gravity actuated and unless they are supported, the members **52** will hang downwardly in a substantially vertical position as illustrated in FIGS. **2** and **3.** In this condition, the compartments **24** and **26** are in communication with each other. This condition occurs when the closure door **28** is in closed condition and a signalling flag, generally designated by the numeral **58,** is in a retracted or inoperative position.

When the closure door **28** is pivoted to an open position or the signalling flag **58** is manually pivoted to an upright signalling position, the trapdoor **22** will be closed by an actuating member, generally designated by the reference number **60,** and which includes an elongated transversely extending rod **62** having an elongated rod **64** perpendicular with one end thereof with the rod **64** forming a support for a signal flag **66** in the form of a metal plate which may be conveniently colored red or other suitable color. The rod **64** and the flag **66** are disposed exteriorly of the housing **10** and the rod **62** is journaled from the housing **10** for pivotal movement about a transverse axis to swing the flag **66** between extended and retracted positions.

Rigidly affixed to the central portion of the rod **62** is a generally V-shaped rod **68** having diverging legs **70** and **72** extending laterally therefrom as illustrated in FIG. **7** with the apex of the V-shaped members **68** being affixed to the rod **62** as by welding or the like. As illustrated, the apex of the V-shaped rod is placed on top of and welded to the rod **62** with the legs **70** and **72** of the V-shaped rod **68** underlying and engaging the trapdoor members **52** for supporting the trapdoor members in horizontal position when the V-shaped rod **68** is in substantially horizontal position and the rod **64** is in substantially vertical position. The end portion of the rod **62** which is remote from the rod **64** is provided with a laterally extending finger or rod **74** having a downwardly offset free end portion **76** which generally parallel the plane of the legs **70** and **72** that is vertically spaced below the plane of the legs **70** and **72.** The finger or arm **74** including the offset arm portion **76** may be integral with or welded to the rod **62** so that it will move in a vertical plane as the rod **62** is pivoted.

The access door **28** is provided with a rod **78** welded to the door at the interior corner thereof defined by the flange **68** and rear door groove **50** so that the rod **78** is fixed to and rigid with the door **28.** The lower end of

the rod 28 includes a downwardly inclined portion 80 which extends downwardly alongside of the outer side edge of one of the trapdoor members 52 outwardly of the end of the hinge 54 as illustrated in FIGS. 2 and 4. The terminal end of the inclined rod 80 is provided with an inwardly extending finger or cam 82 which underlies and engages the undersurface of the arm 74 including the downwardly offset arm portion 76. The juncture between the rod portion 78 and the rod portion 80 generally coincides with the hinge 44 of the door 28 so that as the door 28 swings between an opened and closed position, the finger or cam 82 will swing in an arcuate path and cause swinging movement of the offset arm 74 and pivoting movement of the rod 62 as well as swinging movement of the legs 70 and 72 and the rod 64 with the flag 66 thereon.

As illustrated in FIG. 3, the legs 70 and 72 extend to a point adjacent the inner surface of the side walls 14 and the angulation of the legs 70 and 72 is such that the inner surfaces thereof will engage with the edge portions of the trapdoor members 52 and move them to a horizontal closed position as the legs 70 and 72 are moved to a horizontal position. This movement of the legs 70 and 72 is in response to pivoted movement of the door 28 to an opened position as well as movement of the flag 66 to a vertical upright position. In order to secure the flag in an upright position, a spring clip 84 is mounted on the side wall 14 of the housing 10 so that the rod 64 with the flag 66 thereon may be pivoted to the vertical position and the rod 64 engaged in the opened front end of the clip 84. This enables a person who wishes to place outgoing mail in the mailbox for pick-up by the postman to swing the flag to the upright position and secure it in the upright position by using the clip 84. Then, the door 28 may be opened and mail deposited on the trapdoor members 52 which will be in the closed position. The door 28 is then moved to the closed position but the trapdoor members 52 will remain in their horizontal position since the legs 70 and 72 are retained in their horizontal position by the rod 64 being engaged with the clip 84. Then, when the postman arrives, he will note the flag 66 being in the signalling position and he will open the door 28 and remove the outgoing mail and place any incoming mail within the compartment 24 and such mail will be resting on the closed trapdoor members 52. Then the door 28 may be closed and the signal flag 66 lowered in the usual manner by disengaging the rod 64 from the clip 84 and pivoting the flag 66 rearwardly alongside of the housing 10. This releases the trapdoor members 52 and they will swing downwardly to a vertical position and the mail placed in the upper compartment 24 will be deposited downwardly into the lower compartment 26 by the force of gravity. The postman depositing mail in the mailbox may release the flag and return it to a retracted position either before or after he closes the door 28 and the operation would be the same, that is, the trapdoor members 52 would remain closed until the door 28 has been closed and the flag 66 moved to a retracted position.

The side wall 14 of the housing 10 adjacent the arm 74 is provided with a laterally extending downwardly inclined stop member 86 which limits the downward swinging movement of the offset arm portion 76, thus limiting the dowmward movement of the mechanism 60 to a point where the legs 70 and 72 are inclined downwardly and inwardly generally in the position illustrated in FIG. 2.

Inasmuch as the trapdoor members 52 cannot go outwardly beyond the outermost ends of the legs 70 and 72, the V-shaped members 68 will always pick-up and close the trapdoor members 52. Also, the arrangement of the cam 82 and the arm 74 and offset arm portion 76 is such that the mechanism 60 will be actuated to close the trapdoor members 52 before the door 28 is swung outwardly to a point beyond the end of the housing so that it would be impossible for anyone to pivot the door 28 open slightly and reach down through the trapdoor into the compartment 26 or to use an instrument, such as a long narrow gripping tool, wire, or the like, for this purpose, thereby assuring security for the items in the compartment 26.

With this construction, mail from several days delivery may accumulate in the compartment 26 without impeding the delivery of subsequent mail by the postman and without risking theft or tampering with the mail by unauthorized persons. The mechanical structure is relatively simple in construction and is dependable and long lasting in operation, thus enabling the device to be economically used as a mailbox, particularly for use as a rural delivery mailbox, which are frequently subject to unauthorized persons opening the mailbox for unauthorized removal of mail.

While a built-in key operated lock structure has been disclosed, it is within the purview of this invention to employ a padlock associated with a hasp or matching apertured lugs to provide security for the storage area thereby enabling a further reduction in the cost of the mailbox. Also, the rodlike components forming the cam and operating mechanism for the trapdoors may be in the form of stamped sheet metal, cast metal or any other material constructed to satisfactorily perform the intended functions.

The foregoing is considered as illustrative only of the principles of the invention. Further, since numerous modifications and changes will readily occur to those skilled in the art, it is not desired to limit the invention to the exact construction and operation shown and described, and accordingly all suitable modifications and equivalents may be resorted to, falling within the scope of the invention.

What is claimed as new is as follows:

1. A depository receptacle comprising a housing having an upper compartment for receiving items placed therein, swingable access means comprising a swingable door pivotally supported along a transverse axis at the bottom edge thereof and including a cam member extending downwardly from the hinge axis of the door enabling access to the interior of the upper compartment of the housing, trapdoor means forming the bottom of said upper compartment of the housing, a lower compartment in said housing underlying said trapdoor means and receiving items from the upper compartment when the trapdoor means is opened, means operatively associated with said swingable access means and said trapdoor means to automatically operate said trapdoor means in response to swinging of said access means, said means operating the trapdoor means including a transversely extending axial member journaled in said housing, means on said axial member engaged by said cam member to pivot the axial member about a transverse axis when the access door is swung about its axis, and means carried by said axial member

engageable with the trapdoor means for closing the trapdoor means when the access door is swung to an open position.

2. The structure as defined in claim 1 wherein said axial member is in the form of a rod, one end of the rod extending exteriorly of the housing and including a perpendicular extension thereon, a signal flag on the extension for movement between a retracted position and a signalling position, said rod being pivoted to a position for closing the trapdoor means when the signal flag is in the signalling position, and clip means on the housing releasably engaging the extension for retaining the signal flag in signalling position.

3. The structure as defined in claim 2 wherein said trapdoor means includes a pair of panels having outer edges hingedly attached to the inner surfaces of the housing and inner edges disposed in adjacent relation when in horizontal closed position to form a bottom for the upper compartment, said means on the rod engaging the trapdoor means includes a pair of laterally extending diverging leg members having terminal ends adjacent the inner side surfaces of the housing and engaging the edges of the panels for camming the panels to a closed position when the access door or the signalling flag is moved to a signalling position.

4. The structure as defined in claim 3 together with an access door for the lower compartment, lock means for the access door for the lower compartment enabling only those persons having a means for operating the lock means to have access to the lower compartment thereby protecting the items therein from removal by unauthorized persons.

5. The structure as defined in claim 3 wherein said cam member is related to the rod and means thereon engageable by the cam member to completely close the trapdoor means before the access door to the upper compartment is opened sufficiently to enable access down through the trapdoor means to the lower compartment.

6. The structure as defined in claim 5 together with a stop member for limiting the pivotal movement of the rod and the means thereon engageable by the cam member thus limiting the downward swinging movement of the means thereon engaging the trapdoor means, said housing extending longitudinally beyond the access door means for the upper compartment for weather protection and enabling the swingable door for the upper compartment to be moved toward an open position before access to the upper compartment is provided.

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