April 24, 1962 E. McKAY JONES 3,031,133

BANK NIGHT DEPOSITORY ENTRANCE

Filed July 8, 1960 3 Sheets-Sheet 1

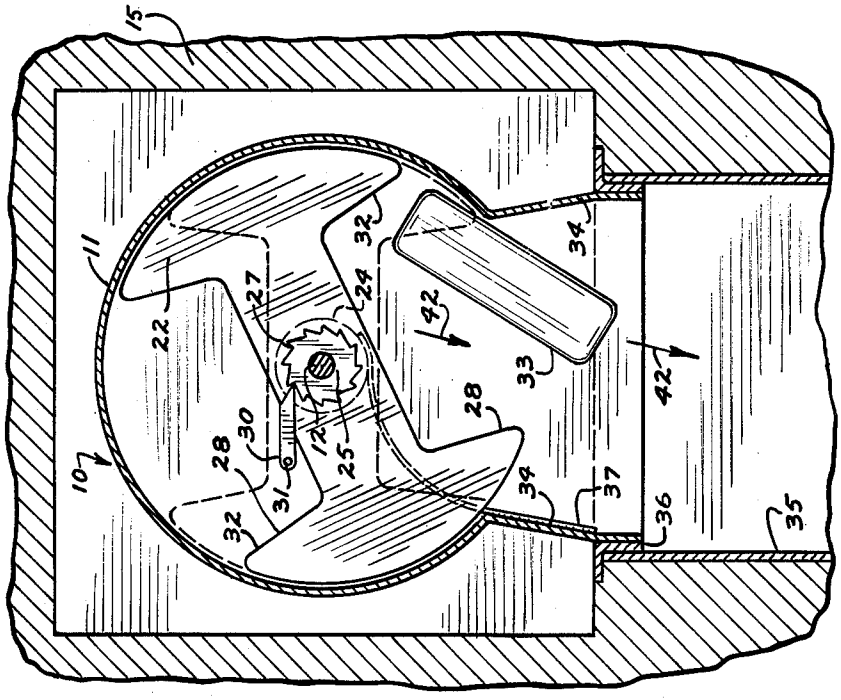


FIG. 2

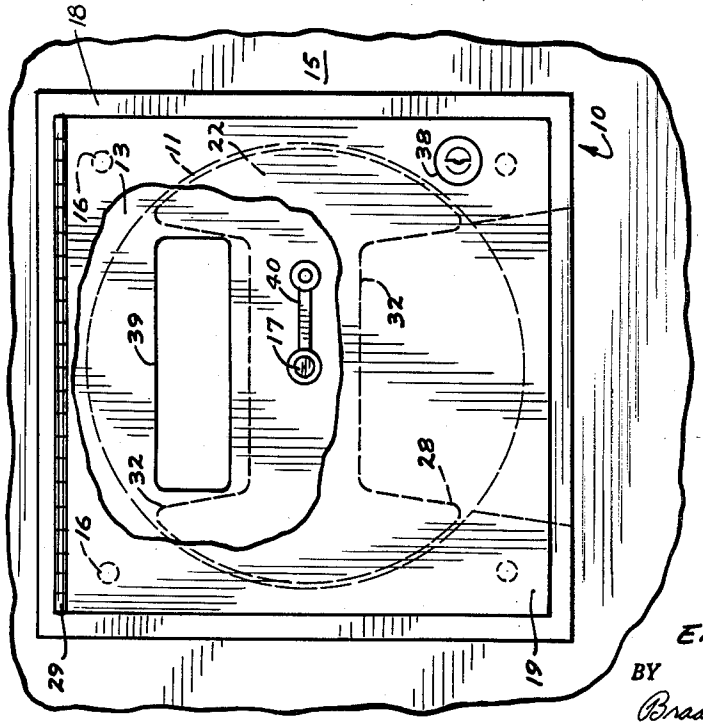


FIG. 1

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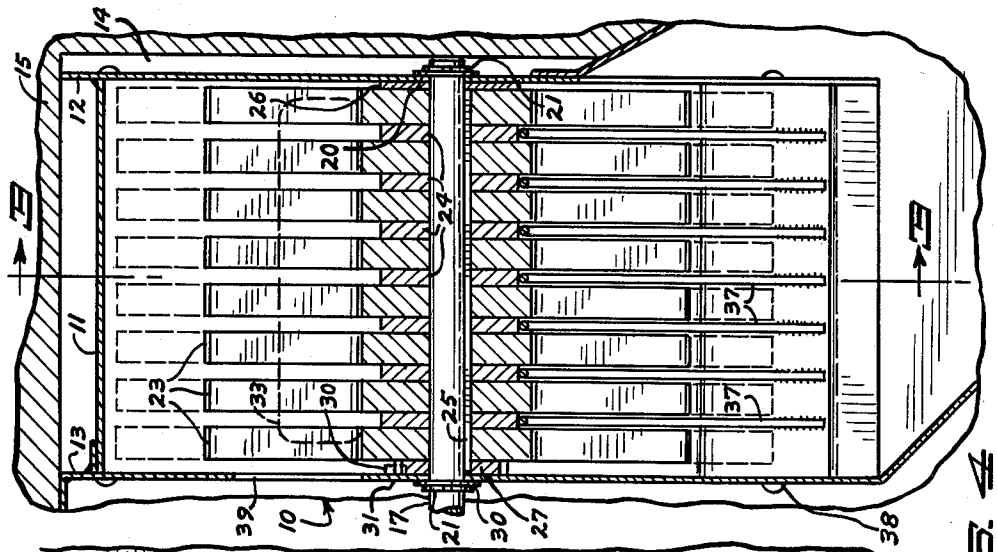


FIG. 4

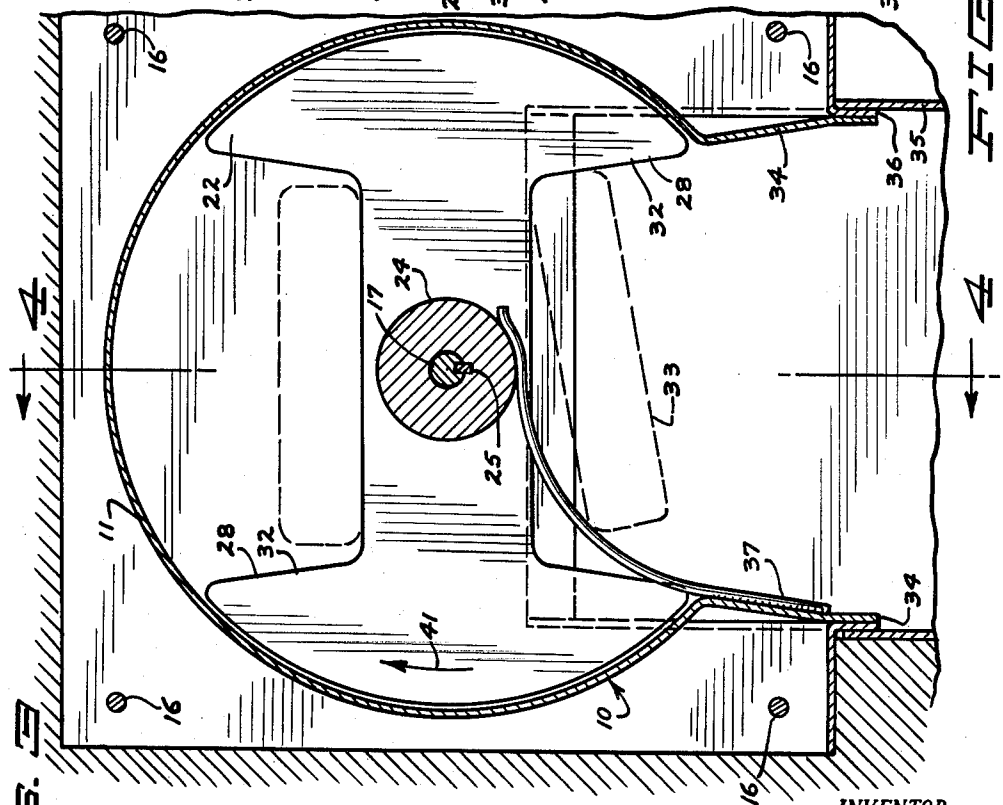


FIG. 3

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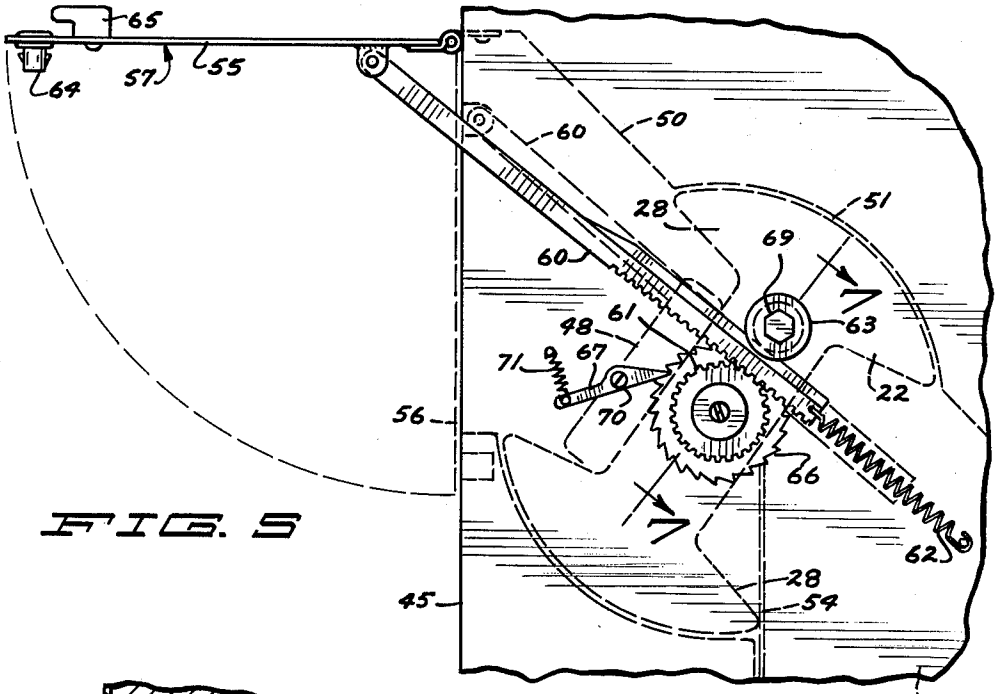


FIG. 5

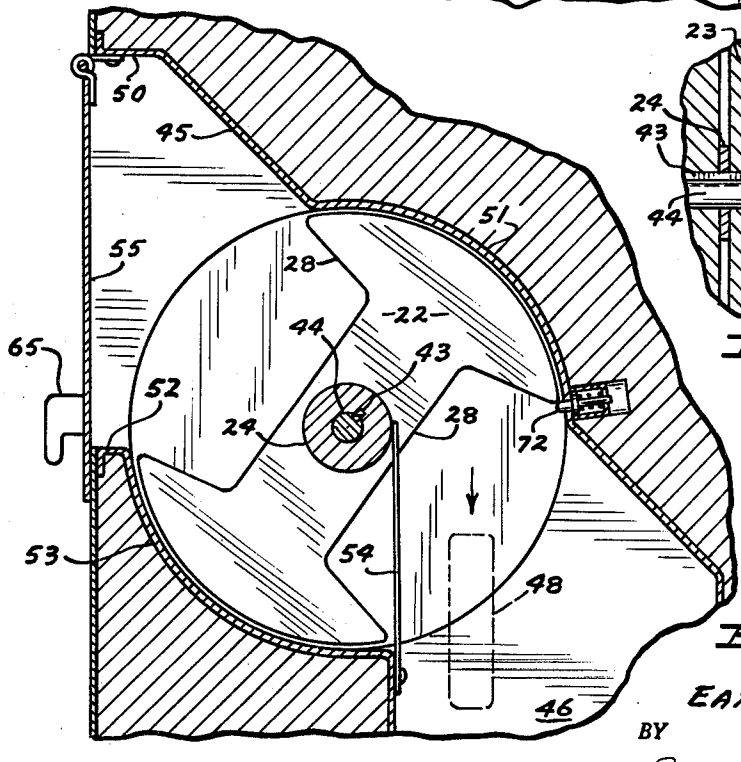


FIG. 6

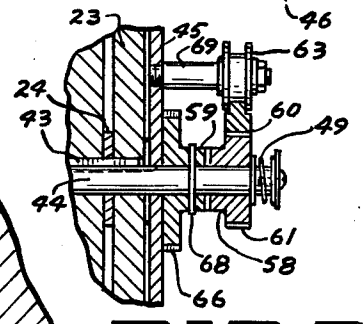


FIG. 7

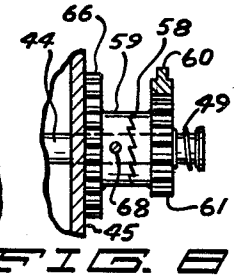


FIG. 8

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United States Patent Office

3,031,133
Patented Apr. 24, 1962

3,031,133

BANK NIGHT DEPOSITORY ENTRANCE

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Filed July 8, 1960, Ser. No. 41,619
7 Claims. (Cl. 232—44)

The invention herein relates to depository structures and more particularly to a bank or trust company night depository entrance that is easy to use and is theft proof.

Present night depository entrances that work on a rotatable cylinder principal have recently fallen prey to clever thieves who are able to rotate a bag into the depository chute and keep it suspended therein with very thin wire or tape extending between the entrance housing and the cylinder, and attached to the bag. When a customer places money in the depository it will fall into the bag. The thief can then merely raise the bag containing the deposit into the depository cylinder and rotate it back up to the access opening. The depository structure shows no evidence of tampering. Security officials cannot tell that a deposit was made, and customers are unable to explain the disappearance of the deposits.

The thefts are made possible in a large part by the fact that the present depository cylinders are first rotated to drop the deposit in the depository chute and then may be rotated in a reverse direction to receive any additional deposit. The device disclosed in the present invention is continuously rotatable in one direction only and cannot be reversed. Fingers slidably positioned in slots in the cylinder prevent the articles deposited from rotating with the cylinder beyond the depository chute. No article that has been placed in the lock and rotated to drop into the chute can be removed.

It is an object of the present invention to disclose an improved, theft-proof cylindrical depository entrance.

In the drawings:

FIG. 1 is a front elevational view of a night depository entrance made according to a first form of the present invention installed in position in a wall;

FIG. 2 is a front elevational view partially in section of the device of FIG. 1;

FIG. 3 is a sectional view of the device of FIG. 1 taken as on line 3—3 in FIG. 4;

FIG. 4 is a sectional view taken as on line 4—4 in FIG. 3;

FIG. 5 is a side elevational view of a second form of the present invention;

FIG. 6 is a sectional end view of the device of FIG. 5 taken as on a line approximately through the center of a rotatable entrance cylinder and normal to a longitudinal axis of said cylinder;

FIG. 7 is an enlarged sectional view taken as on line 7—7 in FIG. 5; and

FIG. 8 is a fragmentary front elevational view of the device of FIG. 5 showing a spring loaded jaw clutch.

Referring to FIGS. 1 to 4 and the numerals of reference thereon, a night depository entrance 10 includes a cylinder housing 11 attached to a rear plate 12 and to a front plate 13. Depository entrance 10 is mounted in a recess 14 located in a bank wall 15 and is permanently attached therein with screws 16 extending through front plate 13 and into wall 15. Said screws are then cemented over to prevent undetected removal and replacement.

A cross shaft 17 is rotatably mounted in said front plate 13 and rear plate 12 and is positioned with a washer 20 and a snap ring 21 adjacent the outer surface of each of said plates. A depository entrance cylinder 22 consists of a plurality of cylinder discs 23 and spacers 24 situated between adjacent cylinder discs. Said discs and spacers

are drivably mounted on shaft 17 with a key 25 and will rotate with said shaft as a unit. A thrust washer 26 spaces the rear cylinder disc from rear plate 12. A ratchet wheel 27 is located between a front cylinder disc 23 and front plate 13 and is keyed to shaft 17. A pawl 30 is pivotally mounted on a stud 31 extending from front plate 13 and engages ratchet wheel 27 to prevent the cylinder 22 from rotating in more than one direction.

Each of cylinder discs 23 has a pair of transverse recesses 32, 32 located at 180 degrees from each other and aligning with the recesses in each of the other discs to form a longitudinally extending receptacle 28. Said receptacle 28 is of dimension to receive a package such as at 33 that is to be deposited.

Cylinder housing 11 has a downwardly extending longitudinal throat portion 34 open to the interior of said housing and connecting the housing with a depository chute 35. A ring 36 seals the housing and the chute to prevent loss of articles placed in the depository. A plurality of fingers 37 are fixedly attached to one side of the cylinder housing throat 34 and each finger extends upward between adjacent cylinder discs 23 and resiliently rests on spacers 24 as shown. The fingers thereby prevent any article from being rotated upwardly against them and yet allow unrestricted rotation of the entrance cylinder 22. It is to be understood that as long as the fingers 37 terminate adjacent to spacers 24, they would serve their intended purpose.

A cover plate 19 is spaced from front plate 13 and is pivoted as at 29 to a wall plate 18. Plate 19 contains a lock 38 that may be operated to release said plate to allow access to a slot 39 located in plate 13. Access slot 39 is located in a position to permit inserting a package through said slot and into the receptacle 28 in entrance cylinder 22. A hand crank 40 is fixedly attached to an outer end of shaft 17 and may be rotated to drop a package or currency envelope as at 33 into the depository slot. Entrance cylinder 22 is relatively closely spaced from cylinder housing 11 to prevent removal of objects from the depository.

To operate the depository a customer inserts a package through slot 39 of front plate 13 into one of said receptacles 28 in cylinder 22. The customer turns the crank 40 in the direction indicated by an arrow 41 in FIG. 3 until the receptacle 28 into which he placed the package is substantially in line with the throat 34 of the cylinder housing. The package 33 will then drop into the depository chute 35 as indicated by arrows 42 in FIG. 2. If the package becomes lodged in recess 32 the cylinder may be rotated to place the package against fingers 37 which will force the package out of the recess.

As the cylinder can be rotated in only one direction the insertion of a bag that is suspended within the depository chute by wires or other means extending between the rotary cylinder and the cylinder housing and protruding from the slot cannot be removed by rotating the cylinder backwards after the bag has been drawn back up into one of the receptacles. The fingers violate the air space of the receptacles as the cylinder rotates and prevent anything from being rotated against them and upward to be removed through slot 39. Any tampering done to the depository entrance will be evident and concealed thefts are not possible.

Referring now to FIGS. 5 through 8 in the accompanying drawings, a second form of the invention is shown and parts identical with parts in FIGS. 1 through 4 will be identically numbered.

A cylinder 22 is drivably attached with a key 43 to a shaft 44 that is rotatably mounted on end walls 45, 45 of a depository chute 46. Cylinder 22 consists of a plurality of cylinder discs 23 alternated with spacers 24,

as shown in the first form of the invention, and has two transverse receptacles 28, 28 situated 180 degrees from each other. Receptacles 28, 28 are each of dimension to receive a package or currency envelope such as 48.

A top plate 50 of the depository opening is attached to a bank wall 15 and has a raised portion 51 that is of configuration to receive cylinder 22 in a spaced relation for a portion of its outer surface. A lower plate 52 is attached to wall 15 and has a curved portion 53 of configuration to receive cylinder 22 in a spaced relation thereto. A plurality of fingers 54 are fixedly attached to a downwardly extending portion of lower wall 52 and each is positioned in line with one of the spacers 24 of the cylinder 22. When cylinder 22 is rotated the fingers pass through the air space in each of the receptacles 28 and prevent articles from being carried upward from the depository chute 46. The upper end of each finger resiliently rests on the outer surface of the spacer 24 with which said finger is aligned, and is thereby prevented from bending from a force against it when an attempt is made to rotate an object within one of said receptacles 28 upward.

A ratchet wheel 66 is drivably attached to shaft 44 adjacent an inner wall 45 with a drive pin 68. A pawl 67 is pivotally mounted on a stud 70, which is fastened to said end wall 45 and is of dimension to engage ratchet wheel 66. A first spring 71 resiliently urges pawl 67 into engagement with ratchet wheel 66. The ratchet action prevents the cylinder 22 from rotating in more than one direction.

A depository door 55 is hingedly fastened to top wall 50 of the entrance and is rotatable between a closed position represented by dotted lines at 56 and an open position as at 57. A rack 60 is pivotally fastened to door 55 and engages a pinion gear 61 which is pivotally mounted to shaft 44 adjacent an outer end thereof. Pinion gear 61 has a first jaw clutch hub 58 extending inwardly to dirvably engage a second jaw clutch hub 59 which is fixedly attached to ratchet wheel 66. A second spring 49 resiliently urges the jaws into engagement. A third spring 62 is attached to rack 60 and resiliently urges it downwardly and also urges the door 55 to closed and locked position 56. A roller 63 is rotatably mounted on a pivot shaft 70 which is fixedly attached to end wall 45 of said depository chute. Said roller 63 serves as a guide for the rack 60.

When the door is opened, the rack 60 is drawn upward and thereby drives the pinion gear. As the ratchet holds the cylinder from rotating in the direction resulting from this movement the first jaw type clutch hub 58 of the pinion slips past second hub 59 of the ratchet wheel. The rack spring 62 is also extended when the door is opened. An article to be deposited such as the package represented at 48 is then placed into the top one of the receptacles 28. The door is then dropped and the weight thereof as well as the force of the extended spring move the rack downward. The jaw clutch hubs drivingly engage and cylinder 22 is then rotated until the package is dropped down chute 46. The fingers 54 engage the package and prevent it from rotating beyond the chute. Pawl 67 again engages a cog in ratchet wheel 66 and the cylinder is thereby prevented from rotating backwards. A spring loaded detent 72 engages an edge of the now lower receptacle 28 and prevents the inertia of the cylinder from rotating the now upper receptacle past the entrance opening. The weight of the open door and extended spring are sufficient to overcome the detent action and the cylinder will again rotate when under this load.

The weight of the door 55 and the force of the spring 62 act together to rotate the cylinder automatically. As soon as the key lock has been used, the door 55 opened, the package placed inside, and the door dropped, the cylinder will automatically rotate and the package will be deposited safely within the bank. It is to be understood that the weight of the door alone could be such that the spring 62 would be unnecessary. The fact that the cylinder will rotate in only one direction and that the fingers prevent rotation of articles beyond them makes theft by use of a "fishing" method impossible.

The first form of the invention shows the longitudinal axis of the cylinder perpendicular to the outer surface of the bank wall in which it was mounted. The second form shows a longitudinal axis of the cylinder parallel to the outer surface of the bank wall in which it was mounted. Either form presents an easily operated theft-proof depository entrance.

What is claimed is:

1. A night depository entrance including a housing having a receiving opening and a depositing opening, a cylinder rotatably mounted within said housing and having at least one receptacle open to the outer surface thereof and having a plurality of spaced slots open to said outer surface, a plurality of fingers attached to said housing and each terminating adjacent to a bottom surface on one of said slots, said slots being of dimension to extend inwardly from the bottom surface of said receptacle in said cylinder, means for preventing rotation of said cylinder in more than one direction, and means for rotating said cylinder.

2. A night depository entrance including a housing having a receiving opening and a depositing opening, a cylinder rotatably mounted within said housing having at least one receptacle open to the outer surface thereof and positioned to aline with said receiving opening of said housing and being rotatable to aline with said depositing opening, a plurality of spaced slots provided in said cylinder, said slots terminating at least as close to the axis of rotation of said cylinder as does the bottom of said receptacle, a plurality of fingers fixedly attached to said housing and with a portion of each positioned within one of said slots, means for preventing rotation of said cylinder in more than one direction, and means for rotating said cylinder.

3. The combination as specified in claim 2 wherein said means for preventing rotation of said cylinder includes a ratchet wheel drivably attached to said cylinder and a pawl pivotally mounted with respect to said housing and being positioned to engage said ratchet wheel.

4. The combination as specified in claim 3 wherein said means for rotating said cylinder includes a crank attached to said cylinder.

5. A night depository entrance including a housing provided with a receiving opening and a depositing opening; a door hingedly attached to an upper wall of said housing of dimension to cover said receiving opening and being movable between a first open and a second closed position; a cylinder rotatably mounted in said housing on a longitudinal axis thereof, said cylinder being provided with at least one longitudinally extending receptacle open to the outer surface thereof and being provided with a plurality of spaced annular slots situated normal to said longitudinal axis and terminating at least as close to the axis of rotation of said cylinder as does the bottom of said receptacle, said receptacle being rotatable to aline selectively with said receiving opening and said depositing opening of said housing; a plurality of fingers fixedly attached to said housing, each being of configuration to extend into one of said slots below the bottom of said receptacle; a pinion gear operably associated with said cylinder in a manner to drive said cylinder in a first direction; a rack operably associated with said door and positioned to drive said pinion in a direction to drive said cylinder in said first direction when said door is moved from said first open to said second closed position; and means for preventing said cylinder from rotating in other than said first direction.

6. The combination as specified in claim 5 wherein said means for preventing said cylinder from rotating in more than said first direction includes a ratchet wheel driv-

ably attached to said cylinder and a pawl pivotally mounted on said housing and being of dimension to engage said ratchet wheel.

7. A night depository entrance including a housing having a receiving opening and a depositing opening, a shaft rotatably mounted in said housing, a plurality of cylindrical discs drivably attached to said shaft with each disc having at least one outwardly open transverse recess, said recess of each disc alining with the recesses in the other discs, a plurality of cylindrical spacers mounted on said shaft with one of said spacers between adjacent discs,

a plurality of fingers fixedly attached to said housing with each finger resting on an outer surface of one of said spacers, means for preventing rotation of said shaft in more than one direction, and means for rotating said shaft.

References Cited in the file of this patent

UNITED STATES PATENTS

1,632,536	Breen	June 14, 1927
2,901,165	Krug	Aug. 25, 1959