

Filed May 6, 1949

ROTARY DRUM DEPOSITORY

3 Sheets-Sheet 1

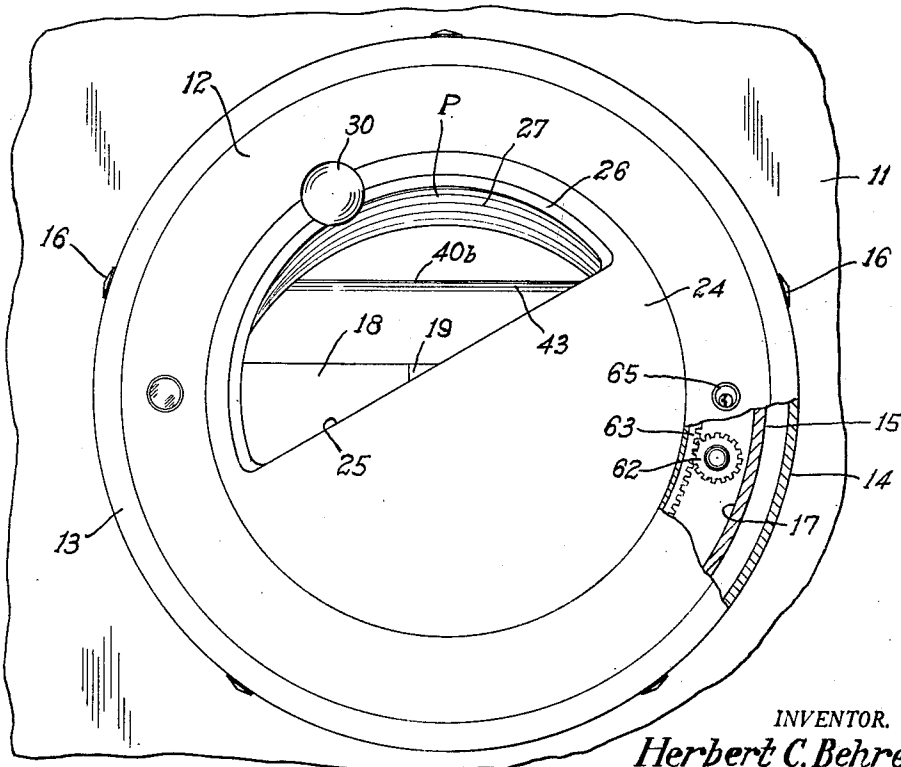
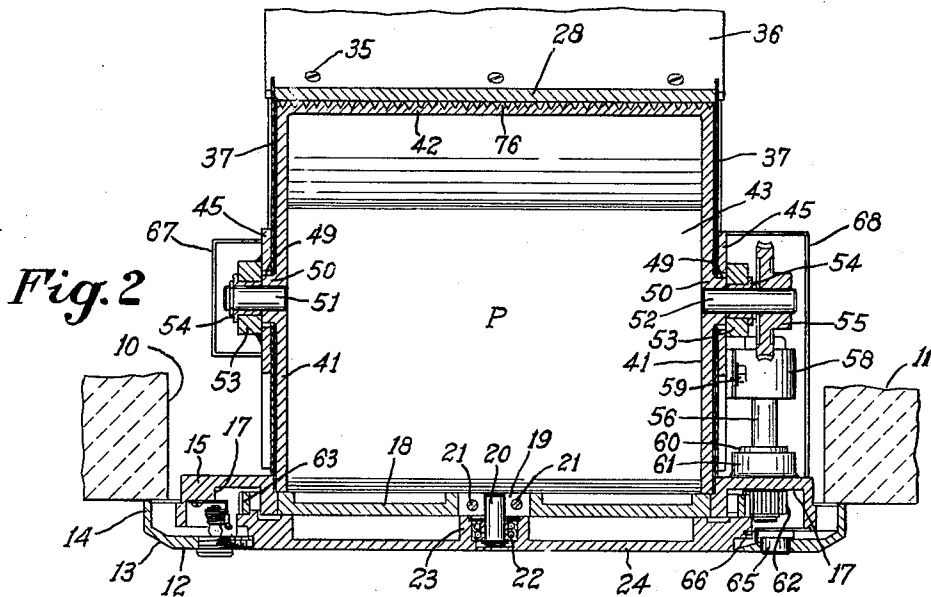


Fig. 1

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3 Sheets-Sheet 2

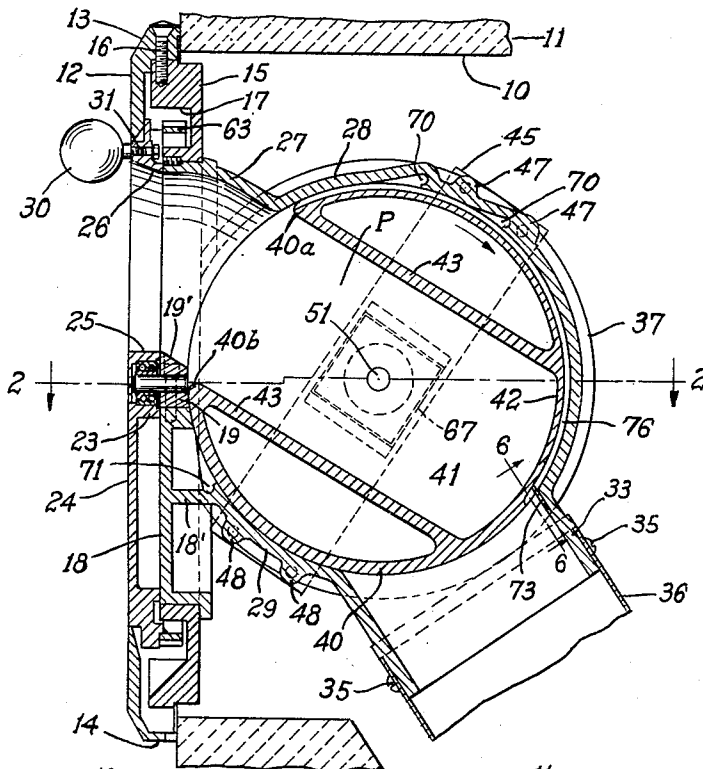


Fig. 3

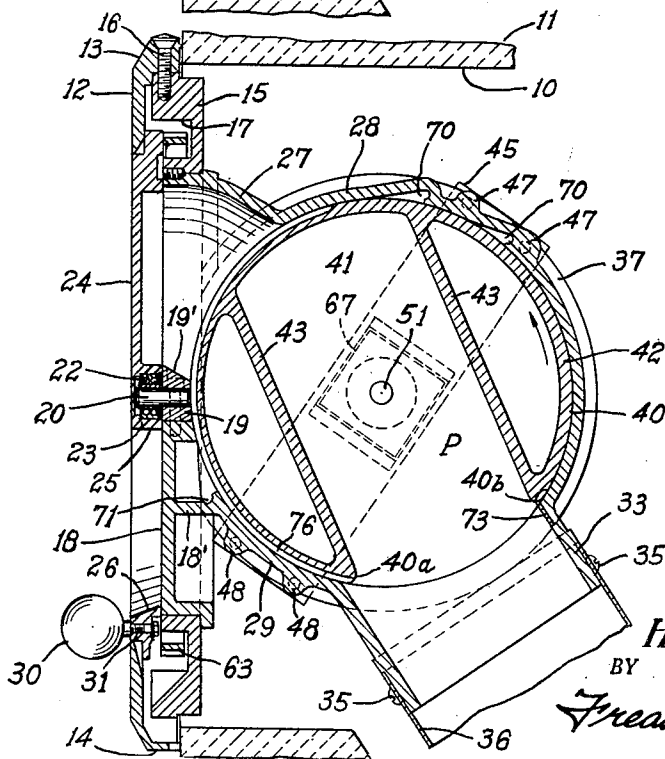


Fig. 4

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3 Sheets-Sheet 3



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ROTARY DRUM DEPOSITORY

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8 Claims. (Cl. 232-44)

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The invention relates generally to depositories used by banks to permit making deposits after business hours, and more particularly to a night depository having a rotating cylinder or drum so constructed as to receive deposits and prevent unauthorized access to deposits after the depository has been closed, following the making of a deposit by an authorized person.

Conventional depositories of this type have been burglarized in various ways by clever and ingenious thieves, who in some cases have used strips of very thin sheet metal, known as shim stock, and fine wires to work around the drum and fish a deposit bag out of the vault of the depository, or to pull out a bag trapped in the chute leading to the vault. Such ways of burglarizing have been partially guarded against by providing gravity or spring-operated doors or flaps designed to close off any through passageways, but such devices usually have been costly and are frequently unsatisfactory or inadequate for a number of reasons.

It is a general object of the present invention to provide a novel and improved depository of the rotating drum type, which is economical to manufacture and practically theft-proof.

Another and more specific object is to provide an improved rotating drum depository having an outer door, in which the drum is moved automatically to a receiving position when the door is opened.

Another object is to provide an improved rotating drum depository in which the drum is moved automatically to closed position by the closing movement of the door.

A further object is to provide an improved rotating drum depository in which the drum is automatically rotated from open to closed position by manually moving the outer door across and in the plane of the door opening.

A still further object is to provide an improved rotating drum depository having novel cooperating means on the drum and the housing in which it rotates for preventing theft.

These and other objects are accomplished by the parts, the improvements, combinations, sub-combinations and arrangements comprising the present invention, which is shown by way of example in the accompanying drawings and described in detail in the following specification, the invention being particularly defined in the appended claims.

In general terms, the present invention may be described as comprising a night depository having a housing mounted in a building wall adjacent the head of a chute extending downward-

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to to a deposit vault, the housing being connected to a door frame defining an opening through the exterior of the wall with a door slidably rotatable in the plane of the door opening for closing the same; and a rotating drum having a side receiving pocket registering selectively in open and closed position with the door opening and the chute, there being gear means operatively connecting the rotating door with the rotating drum so that the drum is moved automatically from open and closed position as the door is manually opened and closed.

Referring to the drawings forming part hereof, in which a preferred embodiment of the invention is shown by way of example:

Figure 1 is a front elevation of the improved depository mounted in a wall, with parts broken away and in section, showing the door partly closed;

Fig. 2 is a plan sectional view, as on line 2-2, Fig. 3;

Fig. 3 is a vertical sectional view showing the drum and door in open position;

Fig. 4 is a similar view showing the drum and door in closed position;

Fig. 5 is a side elevational view, with parts broken away and in section, showing the door in closed position; and

Fig. 6 is an enlarged fragmentary sectional view as on line 6-6, Fig. 3.

Similar numerals refer to similar parts throughout the drawings.

The improved depository is shown positioned in a usual manner in an opening 10 provided in a masonry building wall indicated generally at 11. The depository includes a preferably circular door frame having a face plate 12 which overlaps the wall opening 10, the outer periphery of the plate being beveled at 13, and terminating in an outer rim flange 14 which bears on the outer surface of the wall 11.

A mounting ring 15 is secured to the inside of the face plate 12 and positioned within the wall opening 10, the ring being preferably secured to the face plate by means of screws 16 passing radially through thickened portions of the flange 14 and threaded into the outer periphery of the ring 15. The ring 15 has a recessed portion on its front surface, as indicated at 17, for a purpose to be described. A substantially semi-circular housing plate 18 is mounted within the lower part of the ring 15, and provides a closure for the lower half of the opening formed within the ring.

The upper edge portion of the housing plate 18 has mounted therein, midway of its sides, a

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mounting block 19 in which a pivot pin 20 is secured, the block 19 being secured to the plate 18 by socket head set screws 21. The upper surface of the block is beveled as indicated at 19', as is the adjacent edge of plate 18. The outer end of the pin 20 is journaled by means of anti-friction bearings 22 in a bearing boss 23 formed on the inner side of a door 24 which is rotatable within the face plate 12 and substantially in the plane of the plate 12. Thus the door is rotatable in the plane of the door frame about an axis perpendicular to said plane.

The door 24 has a substantially semi-circular opening 25 formed in its upper portion for registering with the opening formed between the upper edge of the housing plate 18 and the inner periphery of the ring 15. Preferably the upper edge of the door opening is beveled as indicated at 26 and registers in open position with the front edge of a transversely curved throat member 27 which is secured within the door opening and extends rearwardly to merge with a cylindrical upper housing portion 28 around the rotating drum. The housing member 18 has a rearwardly extending flange 18' which merges with a cylindrical housing portion 29 which forms the lower part of the drum housing.

The rotatable door 24 preferably has an outer ball-shaped handle 30 which may be secured by a bolt 31 to the face of the door at the outer periphery of the door adjacent the central portion of the door opening 25, and this ball handle 30 is arranged to be at the top of the door when it is fully open as in Fig. 3 and at the bottom of the door when it is fully closed as in Fig. 4. Preferably the door 24 is arranged to be rotated in a clockwise direction through 180° by grasping handle 30 and moving the door from closed to open position, and the rotation is reversed for moving the door from open to closed position, as will be more fully explained.

The upper housing portion 28 extends rearwardly and downwardly from the throat 27 and forms the upper part of the cylindrical drum. The upper and lower housing portions 28 and 29 terminate in a rectangular tubular chute attaching portion 33 which is preferably attached as by screws 35 to the upper end or head of a discharge chute 36 extending downwardly into a suitable deposit vault. The substantially cylindrical housing formed by the portions 28 and 29 is provided with substantially circular side closure plates 37 secured to the edges of the housing portions and chute portion 33 by screws 38 at intervals around the cylindrical housing.

The rotating drum 40 is in the form of a cylinder which is rotatable within the housing with a very close working clearance, and the drum has end walls 41 spaced slightly inwardly of the end plates 37 of the housing, and connected together by the cylindrical wall 42 of the drum. Parallel partition walls 43 form a pocket or receptacle P within the drum for deposits, and one side of the pocket P opens out through the side of the drum and is arranged selectively to register with the door opening 25 in the open position as in Fig. 3, and with the head of the chute in the closed position as in Fig. 4. The top and bottom edges of the pocket opening are indicated at 40a and 40b respectively, and as shown in Fig. 3, when the drum is in open position the upper partition wall 43 is substantially in line with the upper part of throat 27, while the lower wall 43 is substantially in line with the top beveled edge of housing 18 and block 19.

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The drum 40 is journaled for axial rotation in a pair of attaching bars 45, one alongside of each housing end plate 37. The attaching bars 45 are secured at their ends to the drum housing by cap screws 46 which are screwed into bosses 47 and 48 formed on the housing portions 28 and 29 respectively. At their central portions, the attaching bars are provided with openings 49 through which extend axial bosses 50 formed on the drum end walls 41 and in which the journal pins 51 and 52 are secured. Bearing blocks 53 are secured as by welding, one to each bar 45 around the central opening 49 thereof, and the blocks 53 mount bearing bushings 54 in which the pins 51 and 52 are journaled. Thus the drum 40 is journaled for axial rotation on the attaching bars 45 which are secured to the drum housing.

The journal pin 52 is extended axially outward from the drum, and a worm gear 55 is secured on its outer end. The means for operatively connecting the rotatable door 24 to the rotating drum, for automatically rotating the drum as the door is opened and closed, preferably includes a drive shaft 56 located at one side of the drum housing. The rear end of the drive shaft preferably has a worm 57 secured thereon for meshing with the worm gear 55, and the intermediate portion of the shaft 56 is journaled in a bearing bracket 58 attached to the adjacent bar 45 by bolts 59. The front end portion of the shaft 56 is journaled in a bearing bushing 60 mounted in a bearing block 61 which is carried on the recessed portion 17 of the door frame ring 15. The front projecting end of the shaft 56 has a pinion 62 secured thereon, and the pinion meshes with and is driven by a ring gear 63 which is welded to the rear outer edge of the door 24 and extends into the annular groove formed by the recessed portion 17.

Thus as the door 24 is rotated manually in the plane of the door opening by grasping the handle 30 and turning it about the pin 20 as an axis, the ring gear will drive the pinion 62 which causes the worm 57 to rotate the worm gear 55 and with it the drum 40. The gear ratio between the ring gear and pinion and the worm and worm gear is so calculated that as the door handle 30 is moved through 180° the drum will rotate between open and closed position, that is, the open side of the pocket P in the drum will move from registry with the door opening 25 to registry with the chute portion 33 as the door is moved from open to closed position.

Preferably, the ring gear 63 is provided with suitable stops 180° apart for engaging the pinion 62 at the ends of the closing and opening movement of the drum so as to stop the pocket P in registry with the door opening and chute respectively. If desired, the ring gear 63 may be made in the form of a semi-circular gear segment with stops at each end to accomplish the same purpose.

As the door 24 is rotated manually in a counterclockwise direction, as viewed in Fig. 1, from open to closed position, the drum rotates in a clockwise direction as viewed in Fig. 3 from open position to the closed position of Fig. 4. To open the door, it is rotated in a clockwise direction and the drum rotates counterclockwise.

Means for locking the depository, in closed position as shown in Fig. 4, may include a conventional cylinder type lock indicated at 65 which operates a laterally sliding bolt 66 to engage the same in a socket in the outer periphery of the

door 24, the socket registering with the bolt when the door is fully closed. A suitable sheet metal protective covering 67 may be provided over the journal pin 51, and a similar protective covering 68 may be provided over the drive shaft 56 and worm gearing connected thereto, as indicated in Fig. 2.

In order to prevent any possibility of an unauthorized person inserting thin metal strips, such as shim stock, around the drum and within the drum housing in an effort to fish with fine wires for deposit bags in the chute or deposit vault, guarding recesses 70 are provided in the upper cylindrical housing 28, and a similar recess 71 is provided in the lower housing 29. These recesses extend tangentially outward from the inner cylindrical surface of the drum housing, so that if a thin metal strip is inserted through the door opening and between the drum and drum housing, it will naturally follow into the recess and be curled up and stopped there rather than to follow on around the drum.

A further theft-preventing means is provided as best indicated in Fig. 6, and includes a plate 73 attached to the flange 33 by screws 74 at the intersection of the flange 33 with the cylindrical housing portion 28. The plate 73 projects slightly inward radially of the housing portion 29 and is provided with a serrated edge 75 which mates with a serrated outer surface 76 on the drum wall 42. The serrated outer surface 76 extends from a point just below the plate 73 when the drum is in open position as in Fig. 3 up around the upper part of the drum surface to the edge of the pocket P, thus providing a series of ribs on the outer surface of the drum which register with the serrations 75 as the drum rotates. Thus in any position of the drum in which the pocket P is at least partially open, if it should be possible for an unauthorized person to force a thin metal strip past the guard recesses 70, the end of the strip would be blocked by the serrated plate 73 from gaining access into the upper end of the chute.

The fact that the door 24 slides or rotates in the plane of the outer door frame while the drum is rotating about a horizontal axis perpendicular to the axis of rotation of the door makes it increasingly difficult for an unauthorized person to burglarize the depository. Unauthorized access is further complicated by the rearwardly extending transversely curved throat portion 27 which extends from the door opening 25 rearwardly to the drum housing proper, and which covers substantially all of the intersection between the drum and the upper housing part 28.

In the foregoing description, certain terms have been used for brevity, clearness and understanding, but no unnecessary limitations are to be implied therefrom beyond the requirements of the prior art, because such words are used for descriptive purposes herein and are intended to be broadly construed.

Moreover, the embodiment of the improved construction illustrated and described herein is by way of example, and the scope of the present invention is not limited to the exact details of construction.

Having now described the invention, the construction, the operation and use of a preferred embodiment thereof, and the advantageous new and useful results obtained thereby; the new and useful constructions, and reasonable mechanical equivalents thereof obvious to those skilled in the art, are set forth in the appended claims.

I claim:

1. A night depository including a door frame forming a door opening, a door rotatable in the plane of the door frame about an axis perpendicular thereto for closing said door opening, a cylinder journaled behind the door frame for rotation about a horizontal axis perpendicular to the axis of rotation of said door, said cylinder having a receiving opening in one side adapted to register with said door opening in open position of the cylinder and to dump the contents of the cylinder within the depository when the cylinder is in closed position, and means operatively connecting said door to said cylinder for moving the cylinder to its open and closed position respectively as the door is manually moved to open and closed position.

2. A night depository including a door frame forming a door opening, a door rotatable in the plane of the door frame about an axis perpendicular thereto for closing said door opening, a chute having its upper end positioned behind said door frame, a cylinder positioned between said door frame and chute for rotation about a horizontal axis perpendicular to the axis of rotation of said door, said cylinder having a receiving opening in one side for registering selectively with said door frame opening in open position of the cylinder and the upper end of said chute in closed position of the cylinder, and means operatively connecting said door and cylinder for moving the cylinder to open and closed position respectively as the door is manually opened and closed.

3. A night depository including a door frame forming a door opening, a door rotatable in the plane of the door frame about an axis perpendicular thereto for closing said door opening, a handle secured on said door and spaced radially of said axis, a cylinder journaled behind the door frame for rotation about a horizontal axis perpendicular to the axis of rotation of said door, said cylinder having a receiving opening in one side adapted to register with said door opening in open position of the cylinder and to dump the contents of the cylinder within the depository when the cylinder is in closed position, gear means operatively connecting said door to said cylinder for moving the cylinder to its open and closed position respectively as the door is manually moved to open and closed position, and means for locking said door in closed position.

4. A night depository including a door frame forming a door opening, a door rotatable in the plane of the door frame about an axis perpendicular thereto for closing said door opening, a handle secured on said door and spaced radially of said axis, a chute having its upper end positioned behind said door frame, a cylinder positioned between said door frame and chute for rotation about a horizontal axis perpendicular to the axis of rotation of said door, said cylinder having a receiving opening in one side for registering selectively with said door frame opening in the open position of the cylinder and the upper end of said chute in closed position of the cylinder, gear means operatively connecting said door and cylinder for moving the cylinder to open and closed position respectively as the door is manually opened and closed, and means for locking said door in closed position.

5. A night depository including a door frame forming a door opening, a door rotatable in the plane of the door frame about an axis perpendicular thereto for closing said door opening,

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a cylinder journaled behind the door frame for rotation about a horizontal axis perpendicular to the axis of rotation of said door, said cylinder having a receiving opening in one side adapted to register with said door opening in open position of the cylinder and to dump the contents of the cylinder within the depository when the cylinder is in closed position, a drive shaft mounted on said door frame and having a pinion, a ring gear on said door meshing with said pinion, and gear means operatively connecting said drive shaft to said cylinder for moving the cylinder to its open and closed position as the door is manually moved to open and closed position.

6. A night depository including a door frame forming a door opening, a door rotatable in the plane of the door frame about an axis perpendicular thereto for closing said door opening, a chute having its upper end positioned behind said door frame, a cylinder positioned between said door frame and chute for rotation about a horizontal axis perpendicular to the axis of rotation of said door, said cylinder having a receiving opening in one side for registering selectively with said door frame opening in open position of the cylinder and the upper end of said chute in closed position of the cylinder, a drive shaft mounted on said door frame and having a pinion, a ring gear on said door meshing with said pinion, and gear means operatively connecting said drive shaft to said cylinder for moving the cylinder to its open and closed position as the door is manually moved to open and closed position.

7. In a depository having a door frame forming a door opening and a cylinder journaled behind said door frame for rotation about a horizontal transverse axis parallel with said frame,

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said cylinder having a receiving opening adapted to register with said door opening in open position of the cylinder and to dump the cylinder contents within the depository when the cylinder is in closed position, a door pivoted on said door frame for rotation in the plane of said frame about an axis perpendicular thereto, a peripheral gear on said door, and means operatively connecting said gear to said cylinder for moving the cylinder to open and closed position respectively as the door is manually opened and closed.

8. In a depository having a door frame forming a door opening and a cylinder journaled behind said door frame for rotation about a horizontal transverse axis parallel with said frame, said cylinder having a receiving opening adapted to register with said door opening in open position of the cylinder and to dump the cylinder contents within the depository when the cylinder is in closed position, a door pivoted on said door frame for rotation in the plane of said frame about an axis perpendicular thereto, a peripheral gear on said door, a drive shaft having a pinion thereon meshing with said peripheral gear, and worm gear means operatively connecting said drive shaft and cylinder for moving the cylinder to open and closed position as the door is manually opened and closed.

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