Aug. 25, 1964 E. C. HIGGINS ETAL 3,145,918

DEAL DRAWER

Filed Aug. 8, 1962

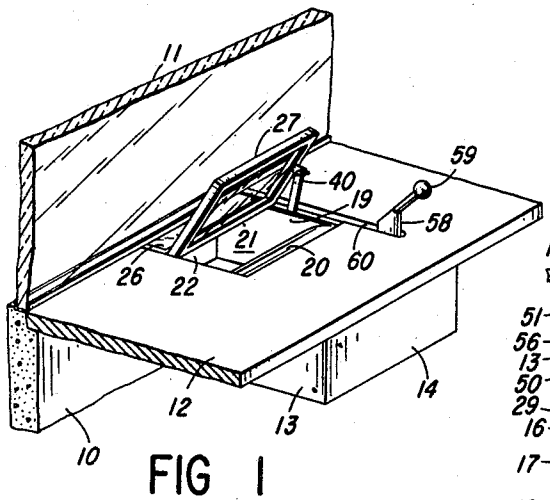


FIG 1

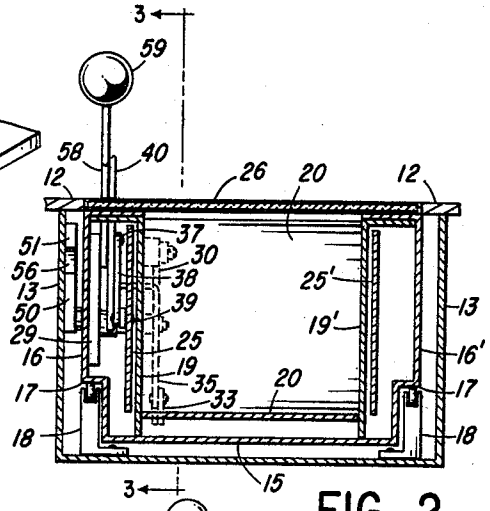


FIG 2

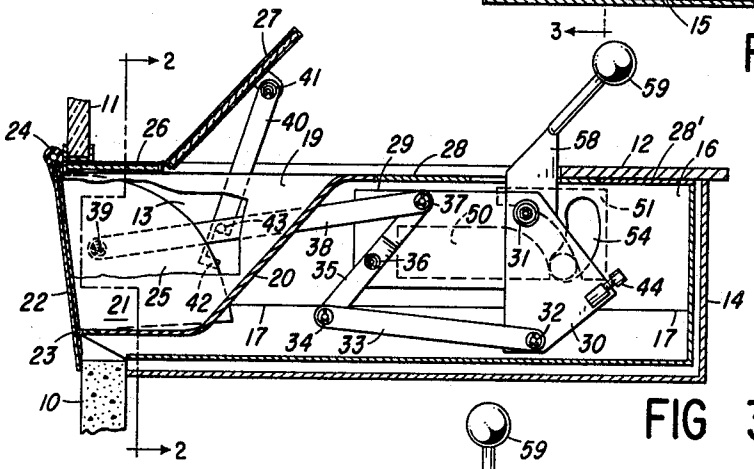


FIG 3

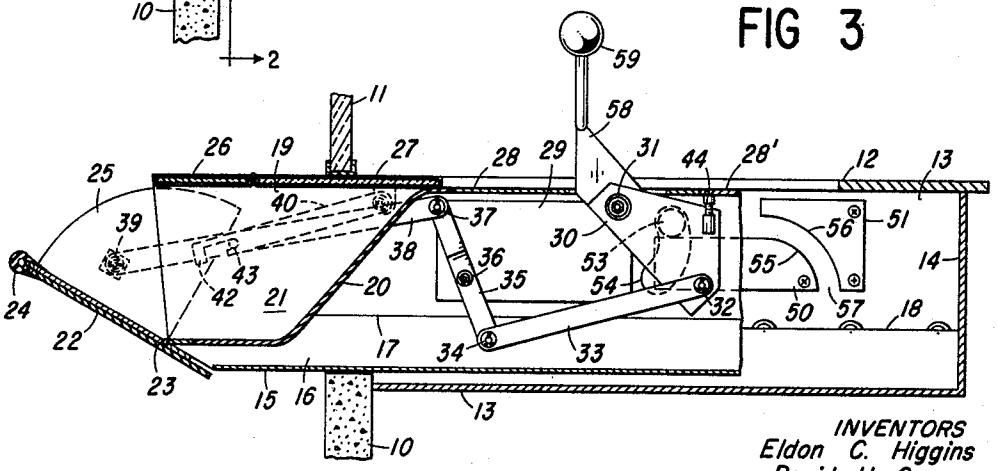


FIG 4

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DEAL DRAWER

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The present invention concerns deal drawers especially of the type used in bank drive or walk-up teller window structures, and particularly concerns a mechanism for co-ordinate, interconnected movement of the drawer and its closure means for access thereto by customers and the teller.

Most teller window structures of the type with which the present invention is concerned employ a receptacle or drawer-like member which is movable outwardly with respect to the window toward the customer and inwardly thereof toward the teller. Often such drawers incorporate two closure members, an outer one for access to the drawer by the customer and an inner one for access thereto by the teller. These closure members are susally so arranged that the one for the teller is closed when the one for the customer is open, and vice versa. In this manner direct communication or access through one to the other is prevented. Additionally, it is desirable, for the ease and speed of operation, to provide some means by which the respective closures may be automatically operated when the drawer, whether by hand or power means, is moved between its teller and customer positions.

The present invention provides a deal drawer having its front or outer wall in the form of a door for access by the customer to a receptacle portion of the drawer. In turn, a rear portion of the top wall of the drawer over the receptacle portion is formed as a lid for access thereto by the teller. A linkage and cam mechanism, mounted to one side of the drawer and to the immediately surrounding drawer housing, respectively, is provided which automatically causes the lid to close and the door to open as the drawer is moved to its customer position, and the door to close and the lid to open when the drawer is retracted to its teller position. Movement of the door and lid is accomplished by links pivoted thereto and to each other and ultimately connected through an additional link and a rock arm to a control crank pivoted to the drawer. The linkage is so arranged that when the drawer is moved between its customer and teller positions by suitable power means, for instance, the control crank is caused to rotate and thus to operate the linkage by means of a cam mounted stationary upon the drawer housing. When movement of the drawer is accomplished manually, the crank is provided with an extension lever so that it may be grasped by the teller to move the drawer to and fro, the crank at the same time being rotated by the cam in order to operate the linkage controlling the movement of the lid and the door.

Accordingly, the primary object of the present invention is the provision of operating means for a deal drawer of the kind described having a door in its front wall and a lid in its top wall for access thereto, which means permit automatic and co-ordinate closing of the lid and opening of the door as the drawer is moved forward towards the customer, and automatic co-ordinate closing of the door and opening of the lid as the drawer is moved inwardly towards the teller.

Another object of the present invention is the provision of a linkage for a deal drawer of the kind described incorporating a front door for access by customers and a top lid for access by the teller, the linkage connecting the door and the lid to an operating crank pivoted on one side of the drawer so that rotation of the crank causes

alternate opening and closing of the door and lid, respectively, rotation of the crank being achieved by engagement thereof with a stationary cam mounted on the drawer housing as the drawer is moved between its teller and customer positions.

Other and further objects, features and advantages of the present invention will be apparent from the description of the preferred form thereof hereafter described, read in conjunction with the following drawings, in which:

FIGURE 1 is a perspective view of a portion of a typical teller window unit showing a deal drawer mounted beneath the teller's counter behind the front wall of the teller enclosure;

FIGURE 2 is a cross-sectional view taken along the line 2—2 of FIGURE 3;

FIGURE 3 is a longitudinal section of the drawer, certain portions being broken away, taken along the line 3—3 of FIGURE 2, and showing the position of the linkage, the door and lid when the drawer is in the teller position; and

FIGURE 4 is similar to FIGURE 3, but shows the position of the linkage, the door and the lid when the drawer is in its customer position.

Inasmuch as drive or walk-up teller windows are well-known, only a brief reference to their over-all structure is necessary. FIGURE 1 illustrates a partial view of a conventional teller window unit incorporating a vertical outer wall composed of a lower section **10**, of concrete or metal, for instance, surrounded by a transparent window structure **11** and a horizontal, inwardly extending teller counter **12**. Herein, and in the appended claims, unless the context requires otherwise, the terms "inner," "inwardly," "rear," and the like refer to a direction toward the teller's position behind counter **12**. Likewise, the terms "outer," "forwardly," "front," and the like refer to a direction toward the customer beyond window **11**. A generally rectangularly shaped deal drawer housing **13** is suitably fixed beneath counter **12** and is provided with an open, forward end opening in turn through wall **10**, its rear or inner end being closed by a panel **14** which may be made removable. Slidably suspended in housing **13** is an open front deal drawer **15**, having opposite side walls **16**, **16'** provided with outer, downwardly facing shoulders **17** thereon. Suitable roller assemblies **18** or other like means which engage shoulders **17** permit drawer **15** to be moved between its rearward teller position, wherein the forward end drawer **15** is flush with the outer face of wall **10**, and a customer position wherein the forward portion of drawer **15** extends beyond the outer face of wall **10**. Spaced inboard from, and parallel to, side wall **16**, **16'** are a pair of opposed inner panels **19**, **19'** in the forward portion of drawer **15** which cooperate with a somewhat S-shaped sub-floor and rear wall **20**, extending first horizontally rearward from the open forward end of drawer **15** and then gradually upwardly, to form a forward receptacle portion or compartment **21**.

The open end of compartment **21** is closed by a customer access door **22** horizontally hinged at **23** along the forward edge of compartment wall **20** for outward movement therefrom. Door **22** extends below hinge **23** so that when drawer **15** is retracted within housing **13** in its teller position, the lower portion of door **22** overlaps the outer face of wall **10**. The upper edge of the latter is surmounted by a suitable resilient bumper and seal **24**. A pair of spaced gusset walls **25**, **25'** extending vertically between hinge **23** and seal **24** and suitably radiused at the top, protrude inwardly from, and move about hinge **23** with, door **22**, their spacing being sufficient to permit them to overlap the outboard faces of inner panels **19**, **19'** and thus provide additional side enclosures for compartment **21** when door **22** is open. The forward portion of counter

12 above compartment 21, when drawer 15 is in its teller position, is cut away in order to provide access by the teller to compartment 21. The latter is covered by a framed glass cover plate 26 fixed to extend over approximately the forward one-third of compartment 21 between the top of drawer 15 and the lower edge of window 11 when the former is in its teller position. The remainder of compartment 21 is covered by a lid 27, also formed of framed glass, hinged along its forward edge to the rear edge of cover plate 26 so that it opens upwardly. Lid 27 is arranged so that when it is closed and drawer 15 is moved to its customer position, lid 27 is prevented from opening by the presence of the lower edge of window 11 thereabove (see FIGURE 4). Finally, a pair of removable top panels 28, 28', extending rearwardly from the rear edge of compartment wall 20, cover the remaining portion of drawer 15.

The operating linkage for door 21 and lid 27 will now be described. A mounting plate 29 is secured to the rear of the inner face of wall 16 and extends forwardly therefrom. A somewhat irregularly shaped, flat operating crank 30 is pivoted at 31 adjacent the upper rear corner of plate 29 and is spaced therefrom for swingable movement longitudinally of drawer 15 in a plane inboard of panel 19. To the lower end of the inboard face of crank 30 in turn is pivoted at 32 one end of a link 33 which extends forwardly, its other end being pivoted at 34 to the lower end of a rock arm 35. The latter is pivoted intermediate its ends at 36 to the forward portion of plate 29 and is spaced therefrom to be swingable in the same plane as crank 30. The upper end of arm 35 is cranked toward wall 16 to be swingable in a plane between walls 16 and 25. Pivoted at 37 to the upper end of arm 35 is another link 38 which extends forwardly between walls 16 and 25 and is pivoted to the latter at 39, the axes of pivots 37 and 39 being parallel to those of crank 30 and arm 35. The lengths of crank 30, links 33, 38 and arm 35, together with the location of their respective pivots, are so arranged that when pivots 31 and 32 on crank 30 are in a generally vertical line, hereafter spoken of as the "teller position" of crank 30, the linkage maintains door 22 closed (FIGURES 2 and 3), but that when crank 30 is partially rotated counterclockwise, hereafter spoken of as the "customer position" of crank 30, door 22 is moved about its hinge 23 to its open position for access to compartment 21 (FIGURE 4). The upper end of a third link 40 is pivoted at 41 about an axis parallel to that of pivot 31 to the side of lid 27 corresponding to panel 19. The lower end of link 40 is provided with a longitudinally extending lost motion slot or notch 42, the inner end thereof engaging a pin 43 extending horizontally from link 38 intermediate its pivots 37 and 39. The length of link 40 and notch 42 and the location of pivot 41 and pin 43 are such that when crank 30 is in its teller position, link 40 raises lid 27, as in FIGURE 3, and, conversely, when crank 30 is in its customer position, lid 27 is allowed to close, as in FIGURE 4. The extent of the counterclockwise rotation of crank 30 is limited by an adjustable bumper 44 protruding from the rear edge thereof to contact the underside of top panel 28'.

Rotation of crank 30 between its teller and customer positions is controlled by a pair of cam plates 50 and 51 and a roller cam follower 53. The latter is pivoted about an axis parallel to that of pivot 31 and extends from the outboard face of crank 30 through an arcuate slot 54 in side wall 16. Cam plate 50 is secured along the inner face of the side wall of housing 13 opposite side wall 16 of drawer 15, and a forward portion of its cam track 55 extends both in a direction parallel to that of the movement of drawer 15 and at a level sufficient for it to be engaged throughout its length by follower 53 when crank 30 is in its customer position. The direction of the rear portion of track 55 diverges gradually downwardly from that of the forward portion to approximately the level of follower 53 when crank 30 is in its teller position. Cam plate 51 is likewise fixed to said wall of housing 13, its cam track 56 being concentric with and spaced from the rear portion of track 55 in order to provide a guide channel 57 to maintain follower 53 in its path throughout its travel along cam track 55. It will be appreciated that the rear portion of track 55 must diverge sufficiently rapidly so that, as drawer 15 is moved to its customer position, crank 30 is swung to its customer position in order to close lid 27 before the latter can strike the bottom edge of window 11. Accordingly, therefore, as drawer 15 is moved forward from its teller position, the rear portion of cam plate 50 causes crank 30 to rotate counterclockwise to its customer position, thus closing lid 27 and opening door 22 for access to compartment 21, owing to the transmission of motion through links 33, 38 and 40 and arm 35. Continued movement of drawer 15 outwardly simply extends it further toward the customer without any further movement of crank 30 and its associated linkage, inasmuch as follower 53 thenceforth engages the straight, forward portion of cam track 55. Retraction of drawer 15 merely moves it inwardly until cam track 56 and directs it down channel 57, thus rotating crank 30 in a clockwise direction to cause door 22 to close and lid 27 to open.

As mentioned earlier, drawer 15 may be moved by power or manual means. In the case of the former, any suitable and conventional apparatus may be employed for such purpose inasmuch as only reciprocal straight line motion need be imparted to drawer 15 in order to move it and to operate crank 30. In the case of manual means, crank 30 may be provided with an upward lever extension 58, topped by a hand knob 59, through a slot 60 in counter 12. Thus a horizontal push or pull on knob 59 will move drawer 15 outwardly or inwardly, respectively, the rotation of crank 30 still being wholly controlled by cam plates 50 and 51. Additionally, in the case of manual operation, the direction of cam track 50 and 56 at their lower ends is made substantially perpendicular to the direction of the forward portion of cam track 55. In this manner, when drawer 15 is in its teller position, it is effectively locked in that position by follower 53 so that drawer 15 cannot be moved nor door 22 swung outwardly until lever 58 is moved slightly forward.

While the present invention has been described with reference to a particular embodiment and detailed descriptive language has been used, it is not so limited. Instead, the following claims are to be read as encompassing such modifications and adaptations of the invention as would ordinarily occur to one in the art.

We claim:

1. In a bank teller window unit including a generally upright outer wall having a generally horizontal counter extending inwardly therefrom, a deal drawer operatively associated with said counter having horizontal movement relative to said counter and wall between a customer access position wherein a forward receptacle portion of said drawer projects outwardly of said wall through an aperture therein and a teller access position wherein said portion is retracted inwardly of said wall, said drawer having a bottom wall and a pair of side walls, the improvement comprising a door at the front of said drawer hinged to said drawer to be movable outwardly and downwardly from its closed position to an open position for access to said receptacle portion and means for movement of said drawer relative to said counter and for coordinate movement of said door relative to said drawer, said means including a linkage having a rock arm pivoted intermediate its ends upon one of said side walls, a first connecting link pivotally connected to both said arm on one side of its wall pivot and to said door and a second connecting link pivotally connected to said arm on the other side of its wall pivot, said pivots being located and operable to permit movement of said second link in one direction to simultaneously move said first link in a first direction to open said door about its hinge axis and to

permit movement of said second link in the opposite direction to simultaneously move said first link in a second direction to close said door when said drawer is moved between its customer and teller positions, respectively.

2. The device of claim 1 wherein said drawer is provided with a top wall enclosing said receptacle portion, said top wall including a lid portion located inwardly of said outer wall when said drawer is in its teller position and hinged at its forward edge to open upwardly along an axis transversely of said side walls for access to said receptacle portion when said drawer is in its teller position, and means operatively associated with said first-named means for coordinate opening of said lid while said drawer is moved to its teller position and for coordinate closing of said lid while said drawer is moved toward its customer position.

3. The device of claim 2 wherein said last-named means includes a third connecting link pivoted to said lid and to said first link intermediate the pivots of the latter to said door and rock arm, said third link and its pivots incorporating lost motion means so that said third link is nonoperative upon said lid while said drawer is moved toward its customer position after said lid is closed.

4. In a bank teller window unit including a generally upright outer wall having a generally horizontal counter extending inwardly therefrom, a deal drawer operatively associated with said counter having horizontal movement relative to said counter and wall between a customer access position wherein a forward receptacle portion of said drawer projects outwardly of said wall through an aperture therein and a teller access position wherein said portion is retracted inwardly of said wall, said drawer having a bottom wall and a pair of side walls, the improvement comprising a door at the front of said drawer hinged to said drawer to be movable outwardly and downwardly from its closed position to an open position for access to said receptacle portion and means for movement of said drawer relative to said counter and for coordinate movement of said door relative to said drawer, said means including a linkage having an operating crank pivoted to one of said side walls adjacent the rear of said drawer and rotatable between a teller position and a customer position, a rock arm pivoted intermediate its ends upon said side wall intermediate said door and said crank pivot, a first connecting link pivotally connected to both said arm on one side of its wall pivot and to said door of said drawer and a second connecting link pivotally connected to said arm on the other side of its wall pivot and to said crank, said pivots being located and operable to permit rotation of said crank about its pivot toward its customer position to simultaneously move said door about its hinge axis to its open position and to permit rotation of said crank about its pivot to its teller position to simultaneously move said door to its closed position, and means to rotate said crank about its pivot between its said positions when said drawer is moved between its respective said positions.

5. The device of claim 4 wherein said drawer is provided with a top wall enclosing said receptacle portion, said top wall including a lid portion located inwardly of said outer wall when said drawer is in its teller position and hinged at its forward edge to open upwardly along an axis transversely of said side walls for access to said receptacle portion when said drawer is in its teller position, and means operatively associated with said linkage means for coordinate opening of said lid while said crank is rotated to its teller position and for coordinate closing of said lid while said crank is rotated to its customer position.

6. The device of claim 5 wherein said last-named means includes a third connecting link pivoted to said lid and to said first link intermediate the pivots of the latter to said door and rock arm, said third link and its pivots incorporating lost motion means so that said third link is operative upon said lid only when said crank is between its teller and customer positions.

7. The device of claim 4 wherein said rotating means comprise a roller cam follower pivoted to said crank and a cam track stationary with respect to said drawer having a forward portion extending in the direction of said drawer movement and a rear portion gradually diverging from said direction, said follower being so pivoted to said crank and said track being so positioned relative to said follower that said track is operatively engaged by said follower throughout movement of said crank and drawer between their teller and customer positions, the length and contour of said rear portion being such that when said drawer is moved toward its customer position said follower causes said crank to rotate about its pivot to its customer position and thereby open said door.

8. The device of claim 7 wherein the direction of said rear portion of said cam track, at the point thereon engaged by said follower when said crank is in its teller position, is substantially perpendicular to the direction of said forward portion, whereby said drawer may be locked against said track in its teller position.

9. The device of claim 7 wherein said drawer is provided with a top wall enclosing said receptacle portion, said top wall including a lid portion located inwardly of said outer wall when said drawer is in its teller position and hinged at its forward edge to open upwardly along an axis transversely of said side walls for access to said receptacle portion when said drawer is in its teller position, and means operatively associated with said linkage means for coordinate opening of said lid while said crank is moved to its teller position and for coordinate closing of said lid while said crank is moved to its customer position.

10. The device of claim 9 wherein said last-named means includes a third connecting link pivoted to said lid and to said first link intermediate the pivots of the latter to said door and rock arm, said third link and its pivots incorporating lost motion means so that said third link is operative upon said lid only when said follower is engaged with said rear portion of said cam track.

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UNITED STATES PATENT OFFICE

CERTIFICATE OF CORRECTION

Patent No. 3,145,918 August 25, 1964

Eldon C. Higgins et al.

It is hereby certified that error appears in the above numbered patent requiring correction and that the said Letters Patent should read as corrected below.

Column 1, line 23, for "susally" read -- usually --; column 4, line 21, after "56" insert -- engages follower 53 --.

Signed and sealed this 22nd day of December 1964.

(SEAL)
Attest:

ERNEST W. SWIDER
Attesting Officer

EDWARD J. BRENNER
Commissioner of Patents