April 3, 1962 C. D. GRABER ET AL 3,028,074

ENVELOPE DEPOSITORY CONSTRUCTION

Filed June 22, 1959 6 Sheets-Sheet 1

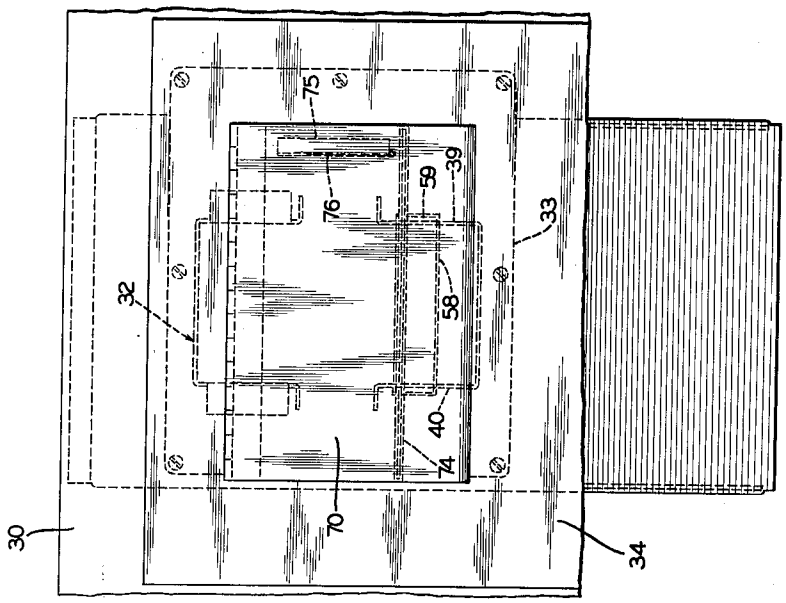


Fig. 2

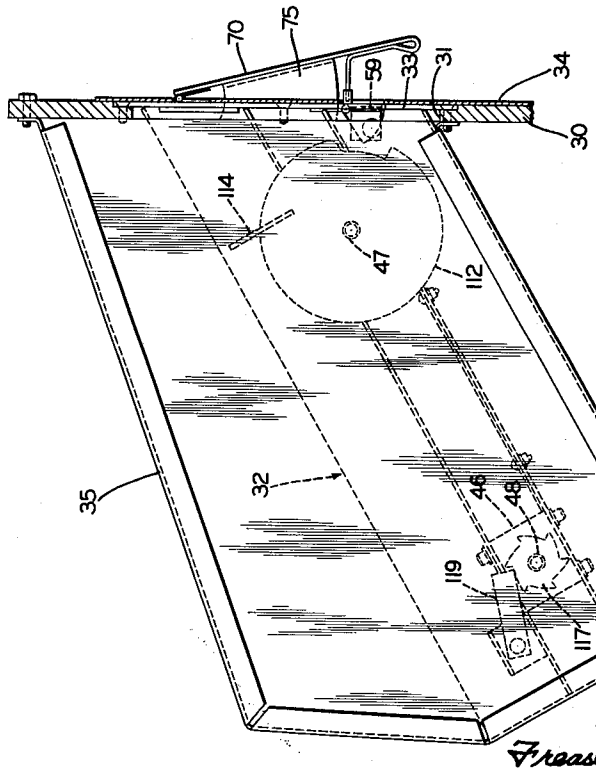


Fig. 1

INVENTORS
CARL D. GRABER,
CHARLES U. DEATON, FRED V. MASON,
and JAMES M. BRYANT

BY Frease, Bishop, Johns & Schick

ATTORNEYS

April 3, 1962 C. D. GRABER ET AL 3,028,074

ENVELOPE DEPOSITORY CONSTRUCTION

Filed June 22, 1959 6 Sheets-Sheet 2

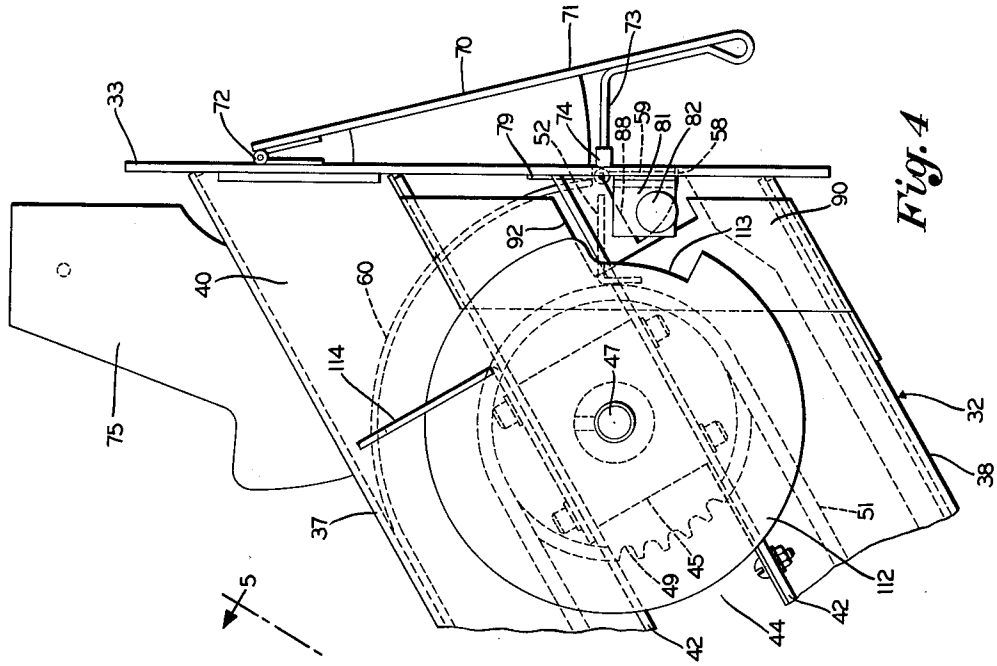


Fig. 4

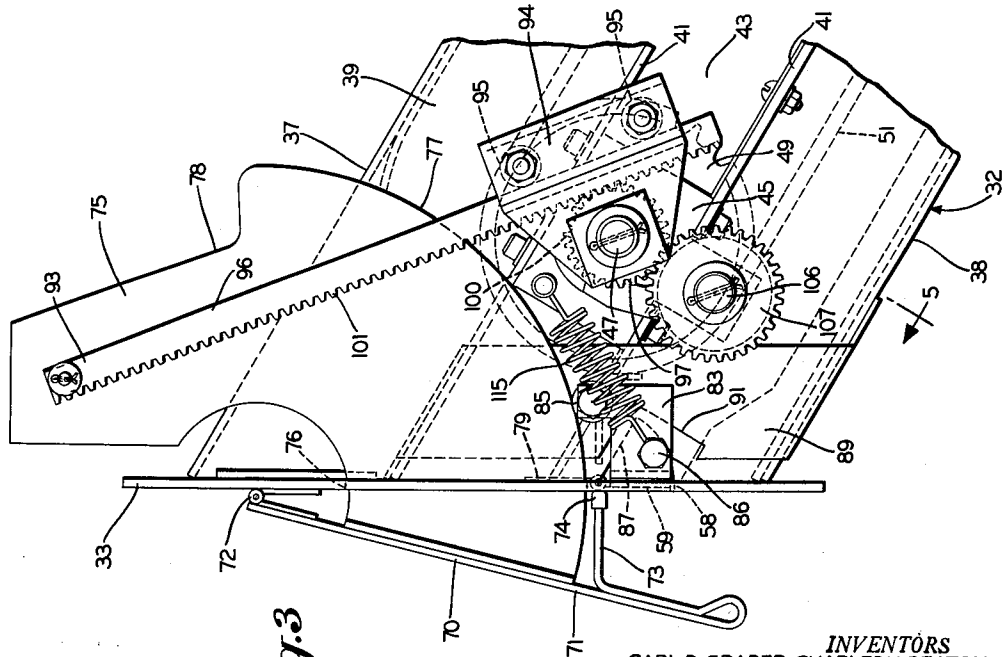


Fig. 3

INVENTORS
CARL D. GRABER, CHARLES U. DEATON,
FRED V. MASON and JAMES M. BRYANT
BY
Frease, Bishop, Johns & Schick
ATTORNEYS

April 3, 1962 C. D. GRABER ET AL 3,028,074

ENVELOPE DEPOSITORY CONSTRUCTION

Filed June 22, 1959 6 Sheets-Sheet 3

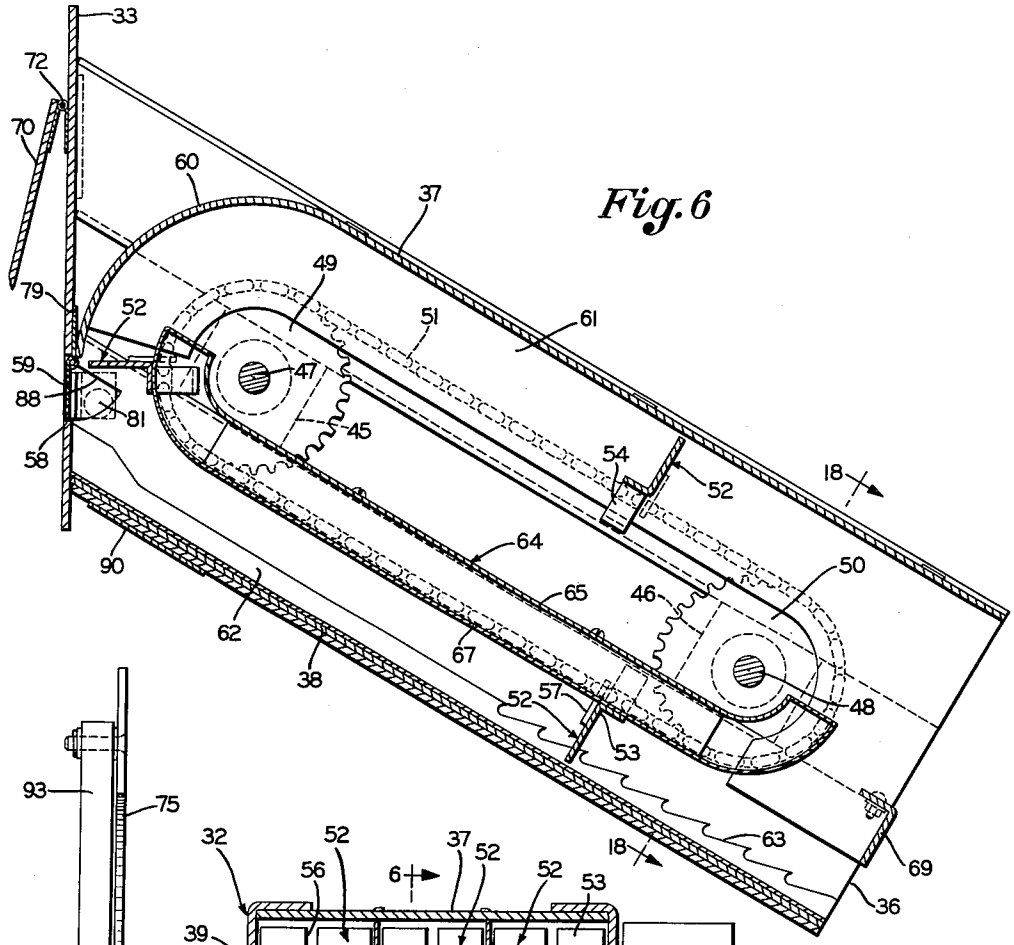


Fig. 6

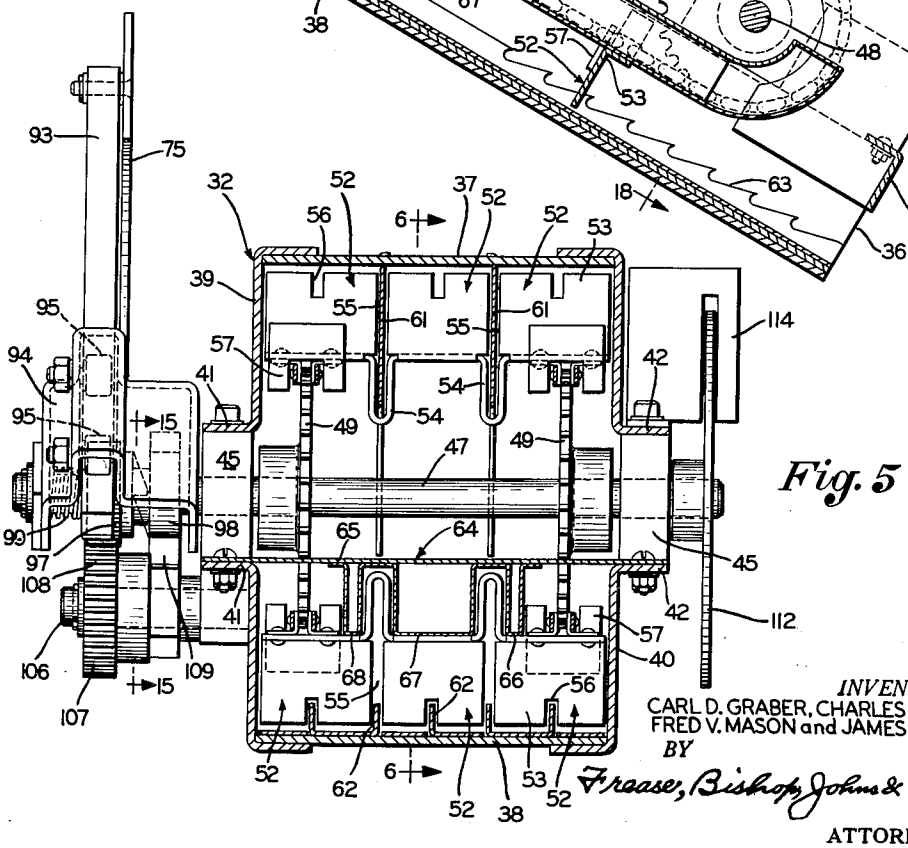


Fig. 5

INVENTORS
CARL D. GRABER, CHARLES U. DEATON,
FRED V. MASON and JAMES M. BRYANT
BY
Frease, Bishop, Johns & Schick
ATTORNEYS

April 3, 1962 C. D. GRABER ET AL 3,028,074

ENVELOPE DEPOSITORY CONSTRUCTION

Filed June 22, 1959 6 Sheets-Sheet 4

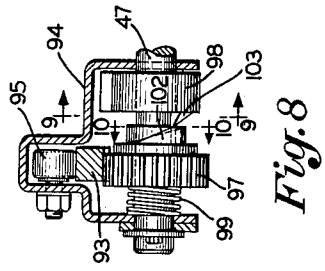


Fig. 8

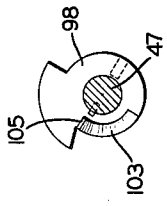


Fig. 9

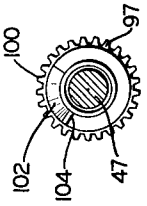


Fig. 10

Fig. 7

INVENTORS
CARL D. GRABER, CHARLES U. DEATON,
FRED V. MASON and JAMES M. BRYANT
BY
Frease, Bishop, Johns & Schick
ATTORNEYS

April 3, 1962 C. D. GRABER ET AL 3,028,074

ENVELOPE DEPOSITORY CONSTRUCTION

Filed June 22, 1959 6 Sheets-Sheet 5

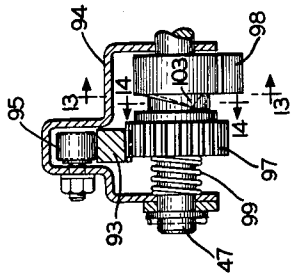


Fig. 12

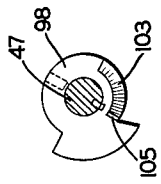


Fig. 13

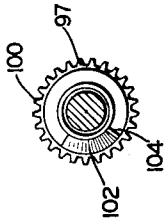


Fig. 14

Fig. 11

INVENTORS
CARL D. GRABER, CHARLES U. DEATON,
FRED V. MASON and JAMES M. BRYANT
BY
Frease, Bishop, Johns & Schick
ATTORNEYS

April 3, 1962 C. D. GRABER ET AL 3,028,074

ENVELOPE DEPOSITORY CONSTRUCTION

Filed June 22, 1959 6 Sheets-Sheet 6

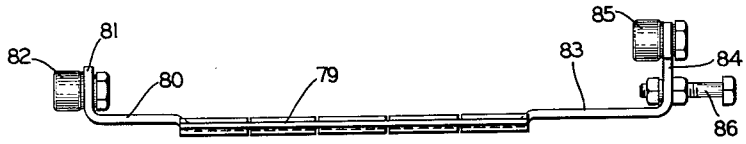


Fig. 20

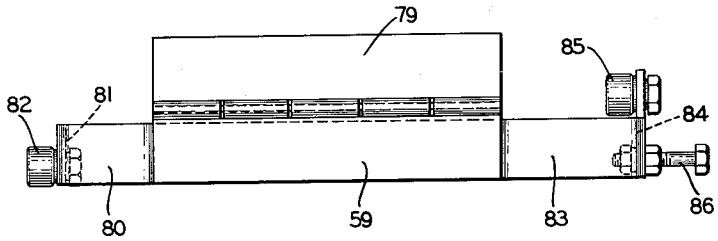


Fig. 21

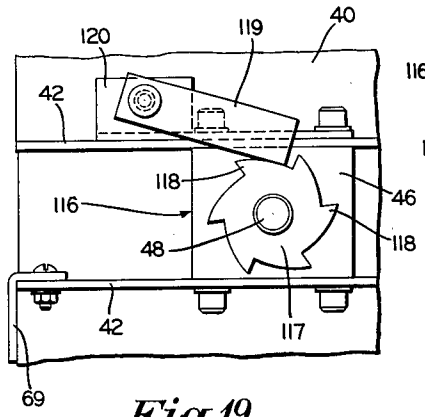


Fig. 19

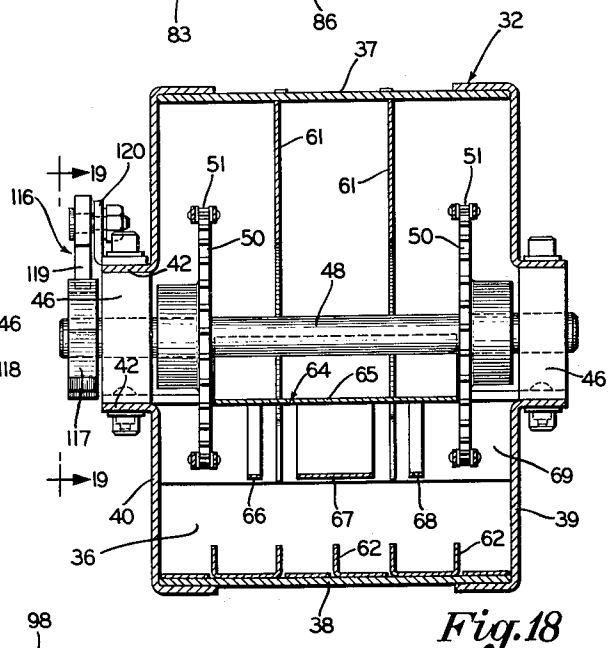


Fig. 18

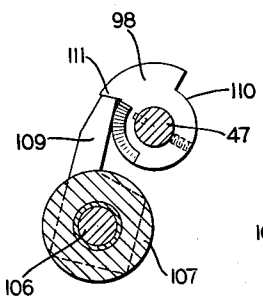


Fig. 15

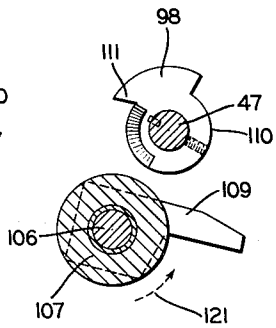


Fig. 16

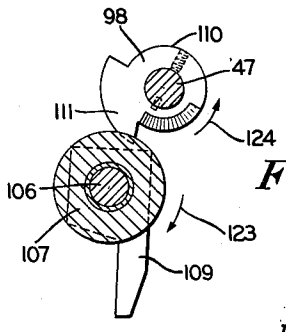


Fig. 17

INVENTORS
CARL D. GRABER, CHARLES U. DEATON,
FRED V. MASON and JAMES M. BRYANT
BY
Frease, Bishop, Johns & Schick
ATTORNEYS

United States Patent Office

3,028,074

Patented Apr. 3, 1962

3,028,074

ENVELOPE DEPOSITORY CONSTRUCTION

Carl D. Graber, Orrville, Ohio, Charles U. Deaton, Golden, Colo., and Fred V. Mason and James M. Bryant, Canton, Ohio, assignors to Diebold, Incorporated, Canton, Ohio, a corporation of Ohio

Filed June 22, 1959, Ser. No. 821,977

22 Claims. (Cl. 232—44)

Our invention relates to improvements in envelope depository construction and more specifically to an envelope depository construction having improved means for guarding against the usual hazards to which such units are exposed. Even more specifically, our invention relates to an improved form of envelope depository construction specifically formed to prevent unauthorized persons from surreptitiously gaining access to envelopes previously deposited in the depository unit.

The major portion of the prior bank depository units have been of the type for receiving relatively large bags or packages of money and valuables such as the usual after-hour depository units. In this form of depository, the unit is normally provided with a door on an outer exposed wall of the bank, which door is retained locked. Furthermore, by a specific arrangement with a particular bank customer, the bank customer is provided with a key so that after banking hours, the customer may unlock the outer access door, deposit bags and packages of money therein, and by closing and relocking the door, the unit is caused to operate, depositing the bag or package within the confines of the bank.

The present construction, however, is adapted specifically only for the deposit of envelopes, and these envelopes are not necessarily being deposited by a person having a previous contract or arrangement with the particular bank. For this reason, envelope depositories must be left open or unlocked so that deposits can be made by anyone merely by properly manipulating the depository unit.

Although the bag-type depository must have all of the usual safeguards for preventing surreptitious entrance through the unit to gain access to the bags or packages of money previously deposited, this problem is even more greatly magnified in an envelope depository unit in that not even the lock at the entrance door is present.

One further relatively simple problem is that of vandals depositing materials, such as paper, stones and other debris, in the envelope depository units since the opening doors thereof are always accessible to anyone without being locked. This problem is greatly minimized, however, by mounting the envelope depository units at heights, for instance, above the usual bag depository units, so that the envelope depository units cannot be reached by anyone having less than adult height.

In most depository units, particularly of the bag type, the bag or package of money is inserted through the access door into a receiving chamber, and either as the access door is closed or due to the weight of the bag or package received in the chamber, certain mechanism is actuated causing the bag or package to pass downwardly into a receiving member within the bank. It is desirable to provide this same general form of mechanism in an envelope depository where the envelope likewise might contain considerable amounts of paper money, valuables or the like, in order to guard against the various forms of attack on such a unit.

One form of attack on depository units is generally termed "fishing." In this case, a line or wire having some grappling means, such as a hook, is inserted downwardly through the outside access door to within the confines of the depository, and an attempt is made to engage an object, whether a bag, package or envelope,

within the depository or receiving member therebelow, so that this object can be withdrawn upwardly and out through the outside access door.

A second means of attack commonly attempted in depository units is termed "trapping." In this case, some receptacle in the form of a bag or box is suspended within the depository unit prior to any deposits being made therein and out of view of the persons later making the deposits.

This receptacle is merely suspended across the usual path of travel of the bag, package, or envelope placed in the depository unit and serves to block the same within the confines of the unit while the unit will appear to work satisfactorily. Thus, after the person or persons have made certain deposits within the depository unit, the unauthorized person returns, removing the receptacle which has trapped the deposits, thereby gaining access to the deposit.

A third major means of attack on depository units is that of the usual physical attack by tools such as jimmy bars or the like. Although the depository unit must be constructed to guard against reasonable physical attack, a unit of this type is not intended to guard against the major physical attack such as the use of explosives and cutting torches, since the portion of the unit which would be attacked is exposed at the outer wall of a bank and the person attacking the same is, therefore, exposed to view of anyone in the vicinity. For this reason, major physical attack is impossible due to this exposure and the time limitations involved, and only simple physical attack could be accomplished which can be more easily guarded against.

Still another problem involved in the provision of envelope depository units is presented by the fact that envelopes are normally relatively easily torn or damaged. It is, therefore, necessary to provide some form of depository unit which operates smoothly and particularly guards against damage to the envelope which could result in loss or damage to the money or valuables contained in the envelope.

Still further, due to the fact that envelopes are usually relatively long, narrow in width, and thin, there is usually the choice presented in the formation of an envelope depository unit to construct it either for insertion of the envelope lengthwise, or in the direction of its width with the greatest length extending laterally. If, however, the unit is constructed for accepting the envelopes inserted in the direction of their width with their greatest length extending laterally, there is always the danger that someone will attempt to deposit an envelope lengthwise so that a large portion of the envelope will remain protruding from the depository unit.

In this case, if the envelope is deposited in the wrong position and the unit is actuated, there is the danger of destroying or damaging the envelope or even jamming the working mechanism of the depository unit. Thus, although certain advantages in overall unit length are gained by constructing it for inserting the envelopes in the direction of their widths, it is preferable to construct the unit for deposit of envelopes therein lengthwise, or large enough for deposit in any flatwise position, making it impossible that the envelope will be wrongly inserted therein.

Still another problem involved in the construction of envelope depositories is caused by the fact that envelopes of varying size and thickness are encountered. If all of the envelopes to be deposited were of the same size and thickness, it would probably be a relatively simple task to construct a unit guarding against all of the above dangers; but this becomes more difficult when the depository unit must be constructed to accept envelopes of

varying size and width and still provide guards against the above means of attack.

Finally, the depository unit must be constructed so that the various moving parts thereof may not be manipulated to gain access to envelopes previously deposited therein. Such manipulation may consist of attempting to force the working parts of the unit to move either in a reverse direction from their normal movement or to place the various moving parts of the unit out of timing and thereby possibly gain access to the inner confines thereof.

It is, therefore, a general object of the present invention to provide an envelope depository construction which solves the foregoing problems and guards against the various means of attack as discussed above.

It is a primary object of the present invention to provide an envelope depository construction in which safeguards are provided preventing the various means of attack such as fishing, trapping and reasonable physical attack.

It is another object of the present invention to provide an envelope depository construction in which preferably an operating door must be raised in order to insert envelopes therein, and as the operating door is again moved to its original normal position, the mechanism within the depository unit is actuated to bodily transfer the envelope downwardly through the unit into a receptacle within the confines of the bank.

It is still a further object of the present invention to provide an envelope depository construction in which the various moving parts thereof are formed and interengage in such a way that the envelope is not damaged during the functioning thereof so that the envelope is moved through the depository unit without damage thereto.

It is also an object of the present invention to provide an envelope depository construction in which the various parts thereof are arranged to guard against the various mens of attack, yet the depository unit will accept envelopes from the very thinnest up to a given thickness, and will properly deposit the same without danger of damage thereto.

It is still another object of the present invention to provide an envelope depository construction in which, even though the various moving parts thereof are moved out of proper timing by improper operation it is impossible to gain any advantage therefrom, and when the depository is out of proper timing, it is impossible to gain access of the inner confines thereof.

It is an additional object of the present invention to provide an envelope depository construction in which certain of the usual forms of physical attack on the depository unit will cause the working mechanism thereof to jam, thereby preventing any possibility of access to the inner confines of the unit or to the envelopes previously deposited therein.

Finally, it is an object of the present invention to provide an envelope depository construction satisfying all of the above objects, yet which is relatively simple, economical to construct, effective in operation and generally reasonably fool-proof.

These and other objects are accomplished by the parts, constructions, arrangements, combinations and subcombinations comprising the present invention, the nature of which is set forth in the following general statement, a preferred embodiment of which—illustrative of the best mode in which applicants have contemplated applying the principles—is set forth in the following description and illustrated in the accompanying drawings, and which is particularly and distinctly pointed out and set forth in the appended claims forming a part hereof.

In general terms, the envelope depository construction comprising the present invention may be stated as including frame means preferably having a generally vertical cover member for mounting the depository unit on a generally vertically extending wall, with the remainder of the depository unit extending through and within the wall. Within the wall, the frame means preferably is angled downwardly, being enclosed overall by housing means and supporting conveying means preferably in the form of longitudinally spaced sets of sprocket members mounting conveyor chain members.

The conveying means likewise preferably includes a series of laterally extending conveyor paddles mounted at spaced intervals along the conveyor chain means for conveying envelopes received by the conveying means longitudinally through the frame means. Still further, the conveying means preferably includes anti-reverse means preventing reversal of the conveying means and requiring operation thereof in only one direction.

The conveying means is actuated through operating means preferably operably connected to certain of the conveyor means sprockets through a particular form of actuating means. The operating means is preferably in the form of an operating member pivotally connected to the frame means cover member and movable from a normal downward position to a fully raised position, with the operating stroke occurring as the operating member is again moved pivotally downwardly to its normal position.

The actuating means operably connects the operating member to the conveying means and preferably includes lost motion drive means operable to move the conveying means only when the operating member is moved from its raised position to its normal lowered position and inoperable to drive the conveying means when the operating member is raised from its normal lowered position to its fully raised position. Furthermore, the actuating means preferably includes timing means preventing a full downward operating stroke of the operating member when the conveying means is not properly positioned and timed with the operating member.

Access to the conveying means of the depository unit for inserting envelopes therein is gained through the frame means cover member preferably through a slot normally closed by slot door means. The slot door means is normally automatically opened when the operating means is raised to its fully raised position preparatory to being moved downwardly through an operating stroke. Further, the slot door means is operably connected to the operating member and also to the conveying means for such automatic opening only when the operating member has substantially reached its fully raised position and also only if the conveying means, through the actuating means lost motion drive means, is in proper timed relationship with the operating member.

Finally, the frame means preferably includes frame members mounted for interengagement with the conveying means conveyor paddles preventing withdrawal of an envelope rearwardly through the frame means and rearwardly past the conveying means paddles. Further, other of these interengaging frame members may be mounted for preventing the conveying means from carrying an envelope rearwardly through the frame means and insuring that the conveying means will only convey envelopes in a single direction forwardly through the frame means.

By way of example, an embodiment of the envelope depository construction of the present invention is illustrated in the accompanying drawings forming a part hereof, wherein like numerals indicate similar parts throughout the several views, and in which:

FIG. 1 is a side elevation of an envelope depository unit incorporating the principles of the present invention mounted in operable position on a vertical wall, which is shown in section;

FIG. 2, a front elevation of the unit of FIG. 1;

FIG. 3, an enlarged fragmentary side elevation of one side of the unit of FIG. 1 with the outside housing removed;

FIG. 4, a view similar to FIG. 3, but looking at the opposite side of the unit of FIG. 1;

FIG. 5, a sectional view, part in elevation, looking in the direction of the arrows 5—5 in FIG. 3, with distant parts removed;

FIG. 6, a sectional view, part in elevation, looking in the direction of the arrows 6—6 in FIG. 5;

FIG. 7, a side elevation, with parts broken away, showing the unit with the operating door in fully raised position;

FIG. 8, an enlarged sectional view, part in elevation, looking in the direction of the arrows 8—8 in FIG. 7, with distant parts removed;

FIG. 9, a sectional view, part in elevation, looking in the direction of the arrows 9—9 in FIG. 8;

FIG. 10, a sectional view, part in elevation, looking in the direction of the arrows 10—10 in FIG. 8;

FIG. 11, a view similar to FIG. 7 with the operating door of the unit in semi-closed position showing the various parts of the unit intermediate an operating stroke of the operating door;

FIG. 12, an enlarged sectional view, part in elevation, looking in the direction of the arrows 12—12 in FIG. 11, with distant parts removed;

FIG. 13, a sectional view, part in elevation, looking in the direction of the arrows 13—13 in FIG. 12;

FIG. 14, a sectional view, part in elevation, looking in the direction of the arrows 14—14 in FIG. 12;

FIG. 15, a sectional view, part in elevation, looking in the direction of the arrows 15—15 in FIG. 5 and showing certain operating parts of the unit positioned ready for the beginning of an operating cycle, but with the operating door still in normally closed position;

FIG. 16, a view similar to FIG. 15 but with the same parts in position corresponding to the operating door being in its fully opened position ready for the operating stroke, as shown in FIG. 7;

FIG. 17, a view similar to FIG. 15, but with the operating door being in the position intermediate the operating stroke of the door, as shown in FIG. 11;

FIG. 18, a sectional view, part in elevation, looking in the direction of the arrows 18—18 in FIG. 6;

FIG. 19, a fragmentary side elevation looking in the direction of the arrows 19—19 in FIG. 18;

FIG. 20, a top plan view of the closure door for the depository slot, removed from the remainder of the construction; and

FIG. 21, a front elevation of the closure door of FIG. 20, removed from the remainder of the construction.

An envelope depository unit incorporating the principles of the present invention is shown in FIG. 1 mounted on an outside wall 30 of a bank building, with the unit extending inwardly within the confines of wall 30 through a wall opening 31. In the preferred form, the depository unit includes frame means, generally indicated at 32, mounted on the wall 30 by a generally vertically extending cover member 33, which cover member covers and overlaps the wall opening 31 with the frame means 32 extending through the wall opening longitudinally inwardly and preferably angled downwardly, as shown in FIG. 1.

The cover member 33 and frame means 32 are mounted on the wall 30 in usual manner, with the cover member 33 being completely hidden from view by the usual decorative plate 34 at the outer side of wall 30. Also, the frame means 32 is completely enclosed by a box-like housing 35 which is positioned over the frame means and is secured to the inner surface of wall 30 in usual manner.

The housing 35 substantially encloses the frame means 32 within the wall 30 and is provided with an opening 36 at the inner end thereof and extending upwardly from the lower portion of the inner end of the frame means 32. The purpose of the opening 36 is to permit the passage of envelopes longitudinally through the frame means 32 and out the inner end thereof, as will be more clearly understood after a more complete understanding of the entire depository unit.

In view of the simplicity of the mounting of the depository unit and the fact that the construction forms a single unit which is merely inserted through the opening 31 in the wall 30 and secured thereto, the construction is described in detail in FIGS. 3 through 21 of the drawings separate from the wall 30 in order that the details thereof may be more clearly seen. Also, the construction is shown with the housing 35 removed for the same purpose.

As best shown in FIGS. 3 through 6 and 18, the frame means 32 is generally box-like in configuration being preferably angled longitudinally downwardly from the cover member 33 and is generally rectangular in lateral cross section. Further, frame means 32, in addition to the cover member 33, is comprised of the upper longitudinally and laterally extending wall 37, the lower longitudinally and laterally extending wall 38, generally parallel to the upper wall, and the similar two-piece generally vertically extending side walls 39 and 40.

Substantially midway of the heights of side walls 39 and 40, vertically spaced laterally outwardly and longitudinally extending flanges 41 and 42 are formed on the side walls 39 and 40 respectively, thereby forming the longitudinally extending slots 43 and 44 in the side walls 39 and 40 which extend completely from the cover member 33 to the extreme inner end of the frame means 32, as shown. A pair of bearing blocks 45 is mounted, one extending between each of the pairs of flanges 41 and 42, in longitudinal alignment and spaced longitudinally from the cover member 33. Also, a similar pair of laterally spaced bearing blocks 46 is mounted, one between each of the pairs of flanges 41 and 42, longitudinally aligned with the blocks 45 and spaced longitudinally from the innermost end of the frame means 32.

Thus, the bearing blocks 45 and 46 serve as vertical spacing members tying together the flanges 41 and 42 of the side walls 39 and 40, with the slots 43 and 44 extending from the cover member 33 longitudinally to the bearing blocks 45, from the bearing blocks 45 to the bearing blocks 46, and from the bearing blocks 46 to the innermost end of the frame means 32. Furthermore, with the upper wall 37 secured to the upper portions of the side walls 39 and 40, the lower wall secured to the lower portions of the side walls 39 and 40, and with these upper and lower walls extending laterally between the side walls, the generally box-like and rectangular cross-section frame means is formed.

A shaft 47 is rotatably mounted through the bearing blocks 45 extending laterally between and laterally outwardly of each of bearing blocks 45. A similar shaft 48 is mounted similarly in the bearing blocks 46, thereby providing longitudinally spaced shafts.

As shown in FIG. 5, a pair of laterally spaced sprocket members 49 is secured to the shaft 47 for rotation therewith, with one of these sprocket members being laterally adjacent the side wall 39 and the other laterally adjacent the side wall 40. A similar pair of sprocket members 50 is mounted on the shaft 48, as shown in FIG. 18, with sprocket members 50 being longitudinally aligned with sprocket members 49 for mounting thereon the continuous chains 51.

Mounted at equally spaced locations around the peripheral lengths of the chains 51 are three paddles 52 which extend laterally between and across the outer peripheries of the chains 51 to within short distances of the side walls 39 and 40, as shown in FIG. 5. Paddles 52 extend from the chains 51 at right angles between the chains 51 and the upper and lower walls 37 and 38 when these paddles are positioned in the portions of the chains 51 between the sprocket members 49 and 50 and terminate only a short distance from the upper and lower walls 37 and 38, as shown in FIG. 6. When the paddles 52 are

in the portions of the chains 51 engaged with the sprocket members 49 and 50, they extend radially outwardly from the sprocket members, again as shown in FIG. 6.

Each of the paddles 52, as best shown in FIGS. 5 and 6, is similar and includes three laterally spaced plates 53, which plates are generally L-shaped in cross section, as shown in FIG. 6, with the generally longitudinally extending leg of the L overlying the chains 51. Further, the plates 53 are laterally connected by the generally U-shaped spacers 54 which extend inwardly from the plates 53 and chains 51 toward the generally longitudinal line of centers of the sprocket members 49 and 50 and the shafts 47 and 48.

Thus, generally longitudinally extending slots 55 are formed laterally between adjacent paddle plates 53, as defined by lateral edges of the plates 53 and the generally U-shaped spacers 54, with these slots 55 extending inwardly beyond the chains 51 a predetermined distance. Further, the plates 53 are provided with the inwardly extending notches 56 approximately laterally midway of their lateral lengths, and the two laterally outward plates 53 are provided with the guards 57 which extend over the chains 51 to prevent the engagement of an edge of an envelope between chains 51 and the plates 53.

The cover member 33 is provided with a generally laterally extending preferably rectangular envelope slot 58 formed therethrough generally longitudinally aligned with the lower portions of the sprocket members 49 and extending slightly therebelow for passage of envelopes therethrough lengthwise into lower portions of the frame means 32 below the sprocket members 49. Furthermore, the envelope slot 58 is normally retained closed by a vertically inwardly pivotal slot door 59 which will be described hereinafter in greater detail.

As shown in FIG. 6, the frame means upper wall 37 terminates forwardly in a downwardly curved arcuate portion 60 which curves in an arc conforming to the periphery of the sprockets 49 and chains 51 as they pass over these sprockets 49, but spaced radially outwardly therefrom a distance slightly greater than the extension of the conveying means paddles 52. This upper wall arcuate portion 60 terminates downwardly adjacent the cover member 33 and at the upper extremities of the envelope slot 58. Thus, as the chains 51 rotate around the sprocket members 49 and 50, the conveying means paddles 52 are enclosed at their extremities, from sprocket members 50 to sprocket members 49 and around sprocket members 49 to the envelope slots 58, by this upper wall 37, with the upper wall being positioned spaced only slightly therefrom.

A downwardly extending rail member 61 is mounted on the upper wall 37 extending downwardly into each of the slots 55 between the plates 53 of the paddles 52, and these rail members 61 terminate only a slight distance above the inward extremities of the paddle spacers 54, as shown in FIGS. 5 and 6. Also, these rail members 61 extend from slightly below the lower extremities of the sprocket members 50 upwardly around the shaft 48, laterally beside the sprocket members 50 and forwardly to the sprocket members 49, extending a uniform distance inwardly from the upper wall 37 as defined by the path of travel of the lower extremities of the paddle spacers 54.

Furthermore, these rail members 61 continue in this uniform inwardly extending path around the shaft 47 conforming to the upper wall arcuate portion 60 and terminate a short distance upwardly from the envelope slot 58. Thus, the rail members 61 extend into the paddle spacers 54 and extend adjacent the paddle plates 53 within the slots 55 during the portion of the movement of the paddles 53 as these paddles begin to move upwardly around the rearward portions of the sprockets 50 and during the entire forward movement of the paddles 52 in the upper portion of the frame means 32, until these paddles once again are in the vicinity of and moving downwardly inwardly adjacent the envelope slot 58 in the cover member 33.

Mounted on the lower wall 38 extending longitudinally the entire extent of the lower wall and spaced laterally are a series of upwardly extending rail members 62 which extend upwardly to slightly below the inner extremities of the notches 56 in the paddle plates 53, so that these paddle plates, when in the lower portion of the frame means 32, extend downwardly over the rail members 62. These rail members 62 may be formed of a multi-piece construction from U and L-shaped members as desired, and there is one of these rail members 62 extending into each of the paddle plate notches 56 as well as into each of the slots 55 between the paddle plates 53.

Furthermore, each of the rail members 62 extends upwardly the same distance, which is uniform from the rearward end of the frame means 32 to within a short distance of the cover member 33, and then is angled upwardly and forwardly to the cover member 33 at a level equal to the lower extremities of the envelope slot 58, as shown in FIG. 6. Beginning intermediate the longitudinal length of the rail members 62, forwardly of the sprocket members 50 and rearwardly the remainder of the rearward extent thereof, these rail members may be formed with the rearwardly extending hooked portions 63, as also shown in FIG. 6.

Thus, the rail members 62 provide laterally spaced longitudinally extending edges defining a laterally extending surface extending longitudinally from the cover member 33 completely through the lower portion of the frame means 32 spaced above the lower wall 38. Furthermore, this surface is spaced upwardly above the lower extremities of the paddle plates 53 as these plates extend over and move longitudinally along rail members 62.

As best shown in FIGS. 5, 6 and 18, a longitudinally extending deflector member 64 is mounted in the lower portion of the frame means 32 extending a short distance outwardly beyond the outer peripheries of the chains 51 but laterally between chains 51 and the sprockets 49 and 50. Deflector member 64 extends from forwardly of the shaft 47 in general longitudinal alignment downwardly and rearwardly conforming to the contour of those portions of the chains 51 and ultimately rearwardly around the shaft 48 to a point in general longitudinal alignment with shaft 48.

Deflector member 64 is formed with an inner mounting plate portion 65 which mounts a series of outwardly extending generally U-shaped portions 66, 67 and 68. The U-shaped portions 66 and 68 are laterally inwardly adjacent the sprocket members 49 and 50 and adjacent the paddle plate spacers 54, with the U-shaped portion 67 being positioned between spacers 54, as shown in FIG. 5.

Thus, the deflector member 64 by its laterally spaced U-shaped portions 66, 67 and 68 forms a deflector surface conforming to and extending slightly outwardly from the outer peripheries of the chains 51, preventing an envelope extending laterally across the rail member 62 from engaging with the chains 51 and sprockets 49 and 50. Furthermore, between the sprocket members 49 and 50, the deflector member mounting plate portion 65 may extend laterally outwardly a sufficient distance to overlie the lower of the flanges 41 and 42 on the side walls 39 and 40 for being secured thereto.

A laterally and downwardly extending closure member 69 is mounted abutting the rearward edges of the upper wall rail members 61 and terminating downwardly, aligned with these rail members, as best shown in FIGS. 6 and 18. This closure member 69 is formed generally L-shaped, extending completely laterally between the side walls 39 and 40 of the frame means 32 and may be secured to the lower of the side wall flanges 41 and 42.

Operating means preferably in the form of an operating door member 70 is generally vertically pivotally mounted on the outer surface of the cover member 33,

as shown in FIGS. 2 and 3. Operating member 70 includes the normally downwardly angled face portion 71 pivotally connected to the cover member 33 at the top edge thereof, as at 72, and extending downwardly and angling away from the cover member 33 to below the lower extremities of the envelope slot 58.

Furthermore, operating member 70 is provided with a rearwardly and laterally extending spacing portion 73, preferably integral with and extending rearwardly from the face portion 71, abutting the cover member 33 above the upper extremities of the envelope slot 58 and normally maintaining the face portion 71 in its downward angled position, spaced forwardly from cover member 33. The rearward edge of the spacing portion 73, which normally abuts the front surface of the cover member 33, may be provided with the usual resilient protector 74.

Spaced from the right-hand edge of the operating member 70, as viewed in FIG. 2, this operating member is provided with a generally vertically and rearwardly extending generally arcuate actuating plate 75 which extends rearwardly through a generally vertically extending slot 76 in the cover member 33, again as shown in FIG. 2. The arcuate configuration of the actuating plate 75 generally conforms to the pivotal path of the operating member 70 as this operating member is pivoted outwardly and upwardly away from the cover member 33 around the pivot axis 72, so that as the operating member 70 is pivoted on the cover member 33, the actuating plate 75 may move forwardly and rearwardly through the cover member slot 76.

As best seen in FIG. 3, the actuating plate 75 has an arcuate cam surface 77 extending from the operating member face portion 71 rearwardly along plate 75 to a predetermined point intermediate its length, where this cam surface terminates in a cam recess portion 78 extending generally toward the operating member pivot axis 72 and to a considerably smaller radius. The purpose of the cam surface 77 and cam recess portion 78 will be hereinafter explained in detail.

The slot door 59 is generally rectangular in configuration conforming to the envelope slot 58 in the cover member 33, and door 59 is vertically and inwardly pivotally connected to a mounting plate 79 which is secured to the rearward surface of the cover member 33 extending upwardly between cover member 33 and the upper wall arcuate portion 60, as shown in FIG. 6. As shown in FIGS. 3, 4, 6, 20 and 21, looking at the front face of the slot door 59, this slot door is provided with a laterally outwardly extending flange 80 at the left side thereof extending slightly rearwardly to lie behind the rear surface of the cover member 33 when the slot door 59 is in closed position received within the envelope slot 58.

The slot door flange 80 at the laterally outward end thereof extends rearwardly in a mounting portion 81 which rotatably mounts the cam roller 82. Cam roller 82 is mounted for rotation about a generally laterally extending axis and is for a purpose to be hereinafter more clearly described.

The slot door 59 is likewise provided with a slightly rearwardly and then laterally extending flange 83 extending laterally from the right side of this slot door. Flange 83 likewise has a rearwardly and upwardly extending mounting portion 84 for rotatably mounting the similarly positioned cam roller 85, and also for mounting the spring pin 86. As is clearly shown in FIGS. 20 and 21, the cam roller 85 is preferably mounted with its axis extending laterally inwardly toward the slot door 59 rather than laterally outwardly away from the mounting portion 84.

In order to permit the mounting of this slot door 59, the side walls 39 and 40 are provided with the generally arcuate openings 87 and 88, as shown in FIGS. 3, 4 and 6. Also, these side walls 39 and 40 are provided with the side reinforcing bands 89 and 90, respectively, spaced slightly rearwardly from the cover member 33, as shown in FIGS. 3 and 4, and these reinforcing bands 89 and 90 are likewise provided with the openings 91 and 92 for permitting the mounting of the slot door 59 as described and shown.

A rack 93 is pivotally mounted at its upper end in the upper portion of the actuating plate 75, as shown in FIG. 3, with this rack extending downwardly telescoped through a gear housing 94. The gear housing 94 mounts a pair of spaced rotatable guide rollers 95 generally longitudinally rearwardly of the rack 93 and abutting the smooth rearward surface 96 of the rack.

Generally longitudinally forwardly, the gear housing 94 is received over the projecting end of the shaft 47 laterally outwardly of the bearing block 45 and at the right-hand side of the frame means 32, as viewed in FIG. 2, or the left-hand side, as viewed in FIG. 5, with the shaft 47 being rotatable with respect to the gear housing 94. At the shaft 47, the gear housing 94 also extends over a drive gear 97 and a lost motion engagement member 98, both of which are mounted on the shaft 47 outwardly of the bearing block 45.

The lost motion engagement member 98 is secured to shaft 47 for rotation therewith, next laterally adjacent the bearing block 45, with one portion of the gear housing 94 extending therebetween. Laterally outwardly from the lost motion engagement member 98, the drive gear 97 is mounted on the shaft 47 for free rotation and lateral sliding movement with respect to shaft 47, and this drive gear is resiliently urged toward the lost motion engagement member 98 by a compression spring 99 positioned around shaft 47 between drive gear 97 and the gear housing 94, thereby extending laterally outwardly from the drive gear 97 and laterally inwardly from the gear housing 94, as shown.

Drive gear 97 is formed with the usual radial teeth 100 which are operably engaged with the teeth 101 on the forward surface of the rack 93. Thus, rack 93 is enclosed between the guide rollers 95 and the drive gear 97 for generally upward and downward movement with respect to the gear housing 94. Further, a downward movement of rack 93 will rotate the drive gear 97 in a clockwise direction, as viewed in FIG. 3, and an upward movement of rack 93 will rotate the drive gear 97 in a counterclockwise direction.

At the laterally inward side surface of drive gear 97, this drive gear is provided with a lost motion driving tooth 102 which is opposed to a lost motion driving tooth 103 formed on the laterally outward side surface of the lost motion engagement member 98, as best shown in FIGS. 5, 8, 9 and 10. The lost motion driving teeth 102 and 103 are formed in usual fashion and are positioned so that a clockwise movement of the drive gear 97 causes the teeth 102 and 103 to slide over each other without engagement, with the drive gear 97 moving laterally outwardly as permitted by the spring 99 as required during this clockwise movement and the movement of the tooth 102 sliding over the tooth 103.

Further, the teeth 102 and 103 are provided with the usual generally laterally extending engagement surfaces 104 and 105, respectively, which will ultimately engage when the drive gear 97 is rotated in a counterclockwise direction, as shown in FIG. 3, and when the engagement surfaces 104 and 105 are laterally adjacent. Once the engagement surfaces 104 and 105 on the lost motion driving teeth 102 and 103 do engage and the drive gear 97 is continued in counterclockwise motion, these surfaces are maintained engaged by the laterally inward urging of the spring 99 against the drive gear 97.

A stub shaft 106 is mounted on the side wall 39 of the frame means 32 extending laterally outwardly below and parallel to the shaft 47. A timing gear 107 is rotatably mounted on the stub shaft 106, with the radial teeth 108 on timing gear 107 operably engaged with the radial teeth 100 on the driving gear 97.

A timing dog 109 is mounted secured to the timing gear 107 laterally inwardly thereof and also rotatable with

respect to the stub shaft 106, with this timing dog extending in a direction generally radially from the stub shaft 106, as shown in FIGS. 3, 5 and 15. Further, the lost motion engagement member 98 overlies the timing dog 109, and member 98 is provided with a circumferentially extending timing recess 110 terminating in a radially outwardly extending timing lug 111.

The lost motion engagement member 98 is positioned on the shaft 47, and the timing dog 109 is operably connected through the timing gear 107 to the drive gear 97 so that when the operating door member 70 is in closed position, as shown in FIG. 3, and the chains 51 with their paddles 52 are in proper timed relation with the drive gear 97, the timing dog 109 is received in the timing recess 110 engaged with the timing lug 111, as shown in FIGS. 3 and 15. The purpose and operation of this driving and timing mechanism will be more clearly understood after a complete description of the operation, as will be hereinafter set forth.

A generally circular cam plate 112 is mounted laterally outwardly of side wall 40, and laterally outwardly adjacent the bearing block 45 on shaft 47 and for rotation with this shaft. As shown in FIG. 4, the cam plate 112 is provided with a cam recess portion 113 in the outer circumferential surface thereof and in a predetermined location with respect to the shaft 47, chains 51 and paddles 52.

The slot door 59 is mounted on the cover member 33 positioned so that the cam roller 82 thereof is aligned with the cam plate 112, and a locking plate 114 may be mounted on the upper of the side wall flanges 42 received over the cam plate 112, as shown in FIGS. 4 and 5. Thus, with the cam recess portion 113 in the cam plate 112, when this recess portion is in the position shown in FIG. 4, the cam plate 112 will not interfere with any rearward pivotal movement of the slot door 59 since the cam roller 82 can be received in this recess portion 113.

The purpose of the locking plate 114 is to frustrate an attempt to drive the cam plate 112 axially from the shaft 47 by an unauthorized person attempting to surreptitiously gain entrance to the inner confines of the frame means 32 ultimately through the slot door 59. If an attempt is made to dislodge the cam plate 112 from this shaft 47, the locking plate 114 will cause the entire conveyor mechanism to jam making it impossible to operate the same.

Further, the slot door 59 is mounted on the cover member 33, with the cam roller 85 normally underlying and in alignment with the cam surface 77 on the actuating plate 75 of the operating member 70, as shown in FIG. 3. A tension spring 115 is attached to the spring pin 86 on the slot door 59 and extends rearwardly where it is attached to the adjacent bearing block 45, so that spring 115 is normally maintained under tension.

Although spring 115 is resiliently urging the slot door 59 to pivot rearwardly on the cover member 33 and thereby move to open position exposing the envelope slot 58, with the cam roller 85 abutting the cam surface 77 on the operating member actuating plate 75, the slot door is retained in its closed position, as shown in FIG. 3. When, however, the operating member 70 is pivoted upwardly pivoting the actuating plate 75 upwardly, the cam roller 85 will ultimately be received in the cam recess portion 78 on plate 75, at which time the spring 115, because of its rearward tension, will open the slot door 59, provided, however, the cam roller 82 at the opposite lateral side of the slot door 59 is aligned with and may be received in the cam recess portion 113 on the cam plate 112, as previously described.

As shown in FIGS. 1, 18 and 19, an anti-reversing mechanism, generally indicated at 116, is mounted at the rearward left side of the frame means 32, as viewed in FIG. 2. This anti-reversing mechanism includes an anti-reversing gear 117 secured to the shaft 48 laterally outwardly of the bearing block 46 and having the series of single direction teeth 118 mounted on the outer circumference thereof.

Further, an anti-reversing dog 119 is pivotally mounted on the upper of the side wall flanges 42 by means of a generally L-shaped mounting bracket 120 and overlying and engaged with the anti-reversing gear 117. The teeth 118 are directed for permitting clockwise movement of the shaft 48, as viewed in FIGS. 1 and 19, but any attempt to rotate the shaft 48 in a counterclockwise direction will be prevented by the anti-reversing dog 119 engaging with one of the teeth 118.

Thus, due to this anti-reversing mechanism 116, the chains 51 with their paddles 52 may rotate only from the rearward end to the forward end of the frame means 32 in the upper portion thereof and from the forward end to the rearward end of this frame means in the lower portion thereof, and any attempt to force the paddles 52 to move in the opposite direction will be resisted by this anti-reversing mechanism 116.

In the operation of the depository unit, the "at rest" position of the construction is shown in FIGS. 3, 4, 6 and 15, with the mechanism in the properly timed relationship. In this "at rest" position, the operating member 70 is in its normal downwardly angled position, with the spacing portion 73 thereof abutting the front surface of the cover member 33.

Further, although the spring 115 engaged with the slot door 59 is resiliently urging the slot door to pivot rearwardly toward open position, the engagement of the slot door cam roller abutting the actuating plate cam surface 77 prevents the slot door from opening and rather maintains it closed, closing off the envelope slot 58. Due to the proper timed relationship, however, of the parts of the mechanism, the cam plate 112 on the shaft 47 is positioned with its cam recess portion 113 aligned with the slot door cam roller 82, although cam roller 82 is prevented from entering recess portion 113 by the cam roller 85 abutting the actuating plate cam surface 77 and maintaining the slot door 59 closed, as previously described.

Still further, as shown in FIG. 6, in this "at rest" position, one of the paddles 52 on the chains 51 is just overlying the envelope slot 58 in the cover member 33, with another of these paddles 52 engaged down over the lower wall rail members 62 in the lower portion of the frame means 32 and just approaching the rear sprockets 50. Also, the third paddle 52 is in the upper portion of the frame means 32 forwardly of the rear sprockets 50 and engaged up over the rail members 61 on the upper wall 37.

Still further, in this "at rest" position, the timing dog 109 connected to the timing gear 107 is engaged in the timing recess 110 against the timing lug 111 of the lost motion engagement member 98, as shown in FIGS. 3 and 15. Finally, the rack 93 is in its maximum upward position due to its operable connection with the actuating plate 75 and operating member 70, as shown in FIG. 3.

When it is desired to insert an envelope in the depository unit, the operating member 70 is raised pivotally upwardly to its fully raised position, as shown in FIG. 7. During the pivotal movement of the operating member 70 also pivoting the actuating plate 75 attached thereto, the cam roller 85 on the slot door 59 rolls along the actuating plate cam surface 77 and finally drops into the cam recess portion 78 on this actuating plate.

Due to the resilient rearward urging of the spring 115 engaged with the slot door 59, as the cam roller 85 reaches the cam recess portion 78, the slot door 59 is pivoted rearwardly to open position, as shown in FIG. 7. Further, this rearward pivotal movement of the slot door 59 is permitted by the cam roller 82 moving into the cam recess portion 113 of the cam plate 112, since the chains 51 and paddles 52 are in properly timed position for this phase of the cycle.

Still further, during this pivotal movement of the op-

erating member 70 and the actuating plate 75, the rack 93 is moved downwardly through the gear housing 94, thereby rotating the drive gear 97 in a clockwise direction, as viewed in FIG. 7. This clockwise movement of the drive gear 97 is, of course, the lost motion direction of rotation of this drive gear so that the lost motion driving tooth 102 of gear 97 merely slides over the lost motion driving tooth 103 of the engagement member 98, thereby not rotating engagement member 98 nor the shaft 47 and thereby permitting the chains 51 and paddles 52 to remain in the same positions previously described.

In view of the operable engagement between the drive gear 97 and the timing gear 107, however, as the drive gear rotates in its clockwise direction, the timing gear will rotate in a counterclockwise direction, as viewed in FIG. 7. This causes the timing dog 109 to likewise rotate in a counterclockwise direction, away from its position in the timing recess 110 and engagement with the timing lug 111 of the engagement member 98 and to the position shown in FIGS. 7 and 16, as indicated by the arrow 121.

The relative positions of the drive gear 97 and lost motion engagement member 98 when the operating member 70 has finally reached its fully raised position are shown in FIGS. 8, 9 and 10. As shown, the engagement surface 104 of the driving tooth 102 on the drive gear 97 is in position for abutting the engagement surface 105 on the driving tooth 103 of the engagement member 98, and the spring 99 has urged gear 97 and engagement member 98 into such engagement.

Thus, when the operating member 70 is raised to its fully raised position, the slot door 59 is automatically opened, exposing the envelope slot 58 and permitting the insertion of an envelope through the envelope slot beneath one of the paddles 52 overlying this slot and onto the lower wall rail members 62. This envelope will ultimately assume a position abutting the paddle 52 which at this point is in downward engagement over the lower wall rail members 62, as indicated by the dot-dash lines 122 in FIG. 7.

At this stage, even though the slot door 59 is open, it is virtually impossible to fish an envelope previously deposited from the rearward to the forward end through the frame means 32, since one of the paddles 52 is blocking the lower portion of the frame means and another of the paddles 52 is blocking the upper portions thereof. Further, the paddle in the lower portion is in downward engagement over the lower wall rail members 62, and this in combination with the rail member hook portions 63 will effectively block an envelope from passing forwardly through the lower portion of the frame means. Also, the paddle in the upper portion of the frame means is upwardly engaged over the upper wall rail members 61 preventing forward withdrawal of any envelope through this upper portion.

Still further, any attempt to manipulate the mechanism by attempting to move the chains 51 and paddles 52 in the reverse direction or clockwise, as viewed in FIG. 7, will be prevented by the anti-reversing mechanism 116. Finally, in view of the spacing of the paddles 52 around the chains 51, even though it might somehow be possible to rotate the chains 51 and paddles 52 in a counterclockwise position, as viewed in FIG. 7, there is always at least one of the paddles in engagement with the lower wall rail members 62 and also at least one of these paddles in engagement with the upper wall rail members 61.

After the envelope has been inserted into the depository unit, the operating member 70 is moved pivotally downwardly. As this operating member begins its downward pivotal movement, as shown in FIG. 11, the movement of the actuating plate 75 immediately forces the cam roller 85 to move out of the actuating plate cam recess portion 78 and onto the cam surface 77, which closes the slot door 59 and completely covers the envelope slot 58.

Further, this movement carries the rack 93 upwardly rotating drive gear 97 in a counterclockwise direction, as viewed in FIG. 11, and since the engagement surface 104 of the lost motion driving tooth 102 on the driving gear 97 is engaged with the engagement surface 105 on the lost motion driving tooth 103 of the engagement member 98, this also rotates the engagement member in a counterclockwise direction, as viewed in FIG. 11. The relative positions of the engagement surfaces 104 and 105, and the drive gear 97 and engagement member 98 are shown corresponding to FIG. 11 in FIGS. 12, 13 and 14.

The counterclockwise rotation of the lost motion engagement member 98 rotates the shaft 47 in a counterclockwise direction rotating the cam plate 112, sprockets 49, chains 51 and sprockets 50 in this same counterclockwise direction, as viewed in FIG. 11. Rotation of the chains 51 causes the paddles 52, which previously had been overlying the envelope slot 58, to move downwardly into engagement over the lower wall rail members 62 and engage the forward end of the envelope, which is again indicated by the dot-dash lines 122 in FIG. 11.

Furthermore, in the intermediate position of the operating stroke, as shown in FIG. 11, the timing dog 109 has begun to rotate in a clockwise direction, as indicated by the arrow 123 in FIG. 17. Also, the lost motion engagement member 98 is rotating in a counterclockwise direction, as indicated by the arrow 124 in FIG. 17, and as previously described.

Thus, at this point, as shown in FIG. 11, the paddle 52 which was at the start previously interengaged with the lower wall rail members 62 is beginning to move upwardly around the sprocket members 50 and is out of engagement with these lower wall rail members. For this reason, continued downward pivotal movement of the operating member 70 causes the paddle 52 at the forward end of the envelope to force this envelope rearwardly along these lower wall rail members and out the rearward end of the frame means 32 beneath the closure member 69.

Finally, at the end of the operating stroke, as the operating member 70 again reaches its fully lowered position, as shown in FIGS. 3 and 6, with the operating member spacing portion 73 abutting the front surface of the cover member 33, the paddles 52 have once again reached the position as shown in FIG. 6. Further, at the end of this movement, the lost motion engagement member 98 has reached the position shown in FIG. 15, and the timing dog 109 has been received in the timing recess 110 adjacent the timing lug 111.

Thus, the mechanism is in position for a repeat of the foregoing envelope depositing cycle.

If intermediate the operating stroke of the operating member 70, that is, intermediate the movement of the operating member from its fully raised position, as shown in FIG. 7, to its fully lowered position, as shown in FIG. 3, the operating stroke thereof should be stopped and the operating member 70 returned to its fully open position, the slot door cam roller 85 will, of course, again be positioned ready to move into the actuating plate cam recess portion 78. The opening of the slot door 59 will be prevented, however, since the cam plate 112, because of the partial operating stroke, will have been rotated by the shaft 47 with the sprockets 49 and chains 51 and the cam recess portion 113 will not be aligned with the slot door cam roller 82. Thus, the opening of the slot door 59 will be resisted by cam roller 82 abutting the outer circumferential surface of the cam plate 112.

For this reason, the slot door 59 cannot be opened unless the operating member 70 is moved to its fully raised position and further unless the chains 51 with their paddles 52 are in their proper timed positions ready to start an operating stroke as determined by the cam plate 112.

Furthermore, if intermediate an operating stroke the

operating member 70 is moved downwardly in short unusually fast motions causing the chains 51 with their paddles 52 to overrun and carry beyond the normal finishing and starting positions, as shown in FIG. 6, this, in view of the previously described connection therebetween, will cause the lost motion engagement member 98 to overrun the timing dog 109. In this case, the timing dog 109 will not engage in the timing recess 110 but rather, due to this excess motion of the engagement member 98, will overlie the timing lug 111 on the lost motion engagement member 98, thereby preventing a complete downward stroke of the operating member 70 and requiring this operating member to be moved back to its fully raised position to once again place all of the elements in proper timing.

Also, since the chains 51 with their paddles 52 have overrun their normal "at rest" positions as previously described and shown in FIG. 6, the shaft 47 along with the cam plate 112 will have also overrun this "at rest" position and the cam recess portion 113 of this cam plate will not be aligned with the slot door cam roller 82. For this reason, when the operating member 70 is moved back to its fully raised position with the various parts out of proper timing, the slot door 59 cannot open, but rather such opening will be resisted by the cam roller 82 abutting the normal circumferential surface of the cam plate 112 displaced from the cam recess portion 113. Thus, the slot door 59 is always maintained in closed position except when all of the parts of the mechanism are in their proper "at rest" positions as shown in FIG. 6, and the operating member 70 is moved to its fully raised position to start the operating stroke.

Finally, since the envelopes as they are inserted into the depository unit are blocked from passing completely through the frame means 32 by one of the paddles 52, an attempt might be made to place a sticky substance on the forward surface of the particular blocking paddle so that when an envelope is inserted therein, it will stick to this paddle and tend to be carried around the sprockets toward the front of the frame means. Since, however, the paddles 52 immediately interengage with the upper wall rail member 61 as these paddles move upwardly around the sprockets 50, any envelope that is tending to stick thereto will be immediately disengaged therefrom by these rail members.

Thus, an envelope depository construction is provided according to the principles of the present invention which satisfies all of the objects previously discussed and particularly guards against the various means of attack, such as fishing, trapping and reasonable physical attack. Furthermore, the envelope depository construction solves all of the problems previously discussed in a relatively simple and efficient manner to provide such a construction which is effective in operation and generally reasonably foolproof.

In the foregoing description, certain terms have been used for brevity, clearness and understanding, but no unnecessary limitations are to be implied therefrom, 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 the construction shown.

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

We claim:

1. Envelope depository construction including a frame having walls forming a passageway generally longitudinally therethrough, the passageway having entry and exit ends, envelope slot means formed in the frame communicating with the passageway entry end, conveyor means on the frame engageable with envelopes deposited through the slot means into the passageway movable for conveying said envelopes to the passageway exit end, operating means normally operably connected in timed relationship with the conveyor means for moving said conveyor means in measured increments of movement, the operating means being movable in said normal timed relationship from a first position to a second position and then back to said first position, the operating means being free of driving connection to the conveyor means during movement from first position to second position, the operating means being operably connected for driving the conveyor means through one of the increments of movement during movement of the operating means from second position to first position, and timing means operably connected to the operating means for blocking complete movement of the operating means from second to first position when said operating means and conveyor means are out of said normal timed relationship.

2. Envelope depository construction including a frame having walls forming a passageway generally longitudinally therethrough, the passageway having entry and exit ends, envelope slot means formed in the frame communicating with the passageway entry end, conveyor means on the frame engageable with envelopes deposited through the slot means into the passageway movable for conveying said envelopes to the passageway exit end, operating means movable from a first position to a second position and then back to said first position, a drive member operably connected to the operating means for movement in a first direction when the operating means is moved from said first position to second position and movable in a second direction when the operating means is moved from said second position to first position, an engagement member operably connected movable with the conveyor means, lost motion engagement means operably connecting the drive member and engagement member when the drive member is moved in said second direction by the operating means for moving the conveyor means in measured increments of movement, said lost motion engagement means interrupting the operable connection between the drive member and engagement member when the drive member is moved in said first direction by the operating means, and a timing dog operably connected and movable with the drive member and engageable with the engagement member blocking complete movement of the operating means from second to first position when said operating means and conveyor means are out of a particular normal timed relationship.

3. Envelope depository construction including a frame having walls forming a passageway generally longitudinally therethrough, the passageway having entry and exit ends, envelope slot means formed in the frame communicating with the passageway entry end, conveyor means on the frame engageable with envelopes deposited through the slot means into the passageway movable in measured increments for conveying said envelopes to the passageway exit end, operating means operably connected to the conveyor means for moving said conveyor means in said measured increments, closure means for said slot means movable to open and closed positions, the passageway being accessible through the slot means when the closure means is in open position and inaccessible through the slot means when the closure means is in closed position, means for moving said closure means from open to closed positions, and means operably connected to the conveyor means for blocking opening movement of the closure means independent of any position and movement of the operating means upon initiating closing movement of the closure means until said conveyor means has moved completely through one of said measured increments of movement.

4. Envelope depository construction including a frame having walls forming a passageway generally longitudinally therethrough, the passageway having entry and exit ends, envelope slot means formed in the frame communicating with the passageway entry end, conveyor means on the frame engageable with envelopes deposited through the slot means into the passageway movable for conveying said envelopes to the passageway exit end, operating means for moving the conveyor means from start positions through complete increments of movement, closure means for said slot means movable to open and closed positions, the passageway being accessible through the slot means when the closure means is in open position and inaccessible through the slot means when the closure means is in closed position, and cam means operably connected between the conveyor means and closure means blocking opening movement of the closure means upon the start of the operating means moving the conveyor means from one of said start positions through one of said increments of movement and at least until said conveyor means has completed said one complete increment of movement, and the closure means being free of blocking by the cam means at least immediately prior to the operating means beginning the movement of the conveyor means from one of said start position through one of said increments of movement.

5. Envelope depository construction including a frame having walls forming a passageway generally longitudinally therethrough, the passageway having entry and exit ends, envelope slot means formed in the frame communicating with the passageway entry end, conveyor means on the frame engageable with envelopes deposited through the slot means into the passageway movable in measured increments for conveying said envelopes to the passageway exit end, operating means operable for moving the conveyor means in said measured increments of movement, the operating means being movable from a first position to a second position and then back to said first position, the operating means being free of driving connection to the conveyor means during movement from said first position to second position, the operating means being operably connected for driving the conveyor means through one of said increments of movement during the entire movement of the operating means from second position to first position, closure means for said slot means movable to open and closed positions, the passageway being accessible through the slot means when the closure means is in open position and inaccessible through the slot means when the closure means is in closed position, an actuating plate operably connected to the operating means for movement with the operating means between said first and second positions, the actuating plate having a cam surface terminating at one end in a cam recess, a cam roller operably connected to the closure means and operably engaged with said actuating plate cam surface at all times except when the operating means has moved to said second position, said cam roller being aligned with and receivable in the actuating plate cam recess when the operating means is in said second position, the cam roller blocking opening movement of the closure means when the cam roller is engaged with the actuating plate cam surface and being free of blocking said opening movement when the cam roller is aligned with the actuating plate cam recess, and spring means operably connected to the closure means normally urging the closure means toward open position.

6. Envelope depository construction as defined in claim 5 in which a timing cam plate is operably connected to the conveyor means for movement with said conveyor means; in which the timing cam plate has a cam surface and a cam recess; in which a second cam roller is operably connected to the closure means engageable with the timing cam plate cam surface during movement of the conveyor means through one of said measured increments of movement and aligned for engagement in the timing cam plate cam recess at the start of one of the conveyor means measured increments of movement; and in which said second cam roller blocks opening movement of the closure means when said second cam roller is engaged with the timing cam plate cam surface thereby blocking opening movement of the closure means anytime the conveyor means is intermediate one of said measured increments of movement and independent of any position and movement of the operating means.

7. Envelope depository construction including a frame having walls forming a passageway generally longitudinally therethrough, the passageway having entry and exit ends, envelope slot means formed in the frame communicating with the passageway entry end, conveyor means on the frame engageable with envelopes deposited through the slot means into the passageway movable for conveying said envelopes to be passageway exit end, operating means for moving the conveyor means from start positions through complete increments of movement, closure means for said slot means movable to open and closed positions, the passageway being accessible through the slot means when the closure means is in open position and inaccessible through the slot means when the closure means is in closed position, the operating means being movable between first and second positions, the operating means being operably connected to the conveyor means for moving the conveyor means from one of said start positions through one of said complete increments of movement during movement of the operating means from second to first position, the operating means being free of operable connection with the conveyor means during movement of the operating means from first to second position, and means operably connected to the operating means and closure means and conveyor means for opening the closure means when the operating means is moved to second position with the conveyor means at one of said start positions and blocking opening movement of the closure means during movement of the operating means from second to first position with the conveyor means moving between said start positions.

8. Envelope depository construction including a frame having walls forming a passageway generally longitudinally therethrough, the passageway having entry and exit ends, envelope slot means formed in the frame communicating with the passageway entry end, conveyor means on the frame engageable with envelopes deposited through the slot means into the passageway movable for conveying said envelopes to the passageway exit end, operating means for moving the conveyor means in increments of movements, closure means for said slot means movable to open and closed positions, the passageway being accessible through the slot means when the closure means is in open position and inaccessible through the slot means when the closure means is in closed position, the operating means being movable between first and second positions, the operating means being operably connected to the conveyor means for moving the conveyor means through one of said increments of movement during movement of the operating means from second to first position, the operating means being free of operable connection with the conveyor means during movement of the operating means from first to second position, closure control means operably connected to the operating means and closure means for opening the closure means when the operating means is moved to second position and the conveyor means is in position to start one of said increments of movement, said closure control means blocking opening movement of the closure means during movement of the operating means from second to first position, timing control means operably connected to the conveyor means and closure means for blocking opening of the closure means when the conveyor means is intermediate one of said increments of movement independent of any position and movement

of the operating means, and the timing control means being free of blocking opening movement of the closure means when the conveyor means is in position to start one of said increments of movement.

9. Envelope depository construction including a frame having walls forming a passageway generally longitudinally therethrough, the passageway having entry and exit ends, envelope slot means formed in the frame communicating with the passageway entry end, conveyor means on the frame having longitudinally spaced portions engageable with envelopes deposited through the slot means into the passageway movable in measured increments for conveying said envelopes to the passageway exit end, at least one of the conveyor means portions being in the passageway at all times, means on the conveyor means portions and means on the walls interengaging one into the other while said conveyor means portions are in said passageway for blocking passage of an envelope past said conveyor means portions while said conveyor means portions are in said passageway, operating means operably connected to the conveyor means for moving said conveyor means in said measured increments, closure means for said slot means movable to open and closed positions, the passageway being accessible through the slot means when the closure means is in open position and inaccessible through the slot means when the closure means is in said closed position, means for moving said closure means from open to closed positions, and means operably connected to the conveyor means for blocking opening movement of the closure means independent of any position and movement of the operating means upon initiating closing movement of the closure means until said conveyor means has moved completely through one of said measured increments of movement.

10. Envelope depository construction including a frame having walls forming a passageway generally longitudinal therethrough, the passageway having entry and exit ends, envelope slot means formed in the frame communicating with the passageway entry end, conveyor means in the frame having longitudinally spaced portions engageable with envelopes deposited through the slot means into the passageway movable in measured increments for conveying said envelopes to the passageway exit end, at least one of the conveyor means portions being in the passageway at all times, means on the conveyor means portions and means on the frame walls interengaging one into the other while said conveyor means portions are in said passageway for blocking passage of an envelope past said conveyor means portions while said conveyor means portions are in said passageway, operating means operable for moving the conveyor means in said measured increments of movement, the operating means being movable from a first position to a second position and then back to said first position, the operating means being free of driving connection to the conveyor means during movement from first position to second position, the operating means being operably connected for driving the conveyor means through one of the increments of movement during substantially the entire movement of the operating means from second position to first position, closure means for said slot means movable to open and closed positions, the passageway being accessible through the slot means when the closure means is in open position and inaccessible through the slot means when the closure means is in closed position, means for moving said closure means from open to closed positions, and means operably connected to the conveyor means for blocking opening movement of the closure means independent of any position and movement of the operating means upon initiating closing movement of the closure means until said conveyor means has moved completely through one of said increments of movement.

11. Envelope depository construction including a frame having walls forming a passageway generally longitudinally therethrough, the passageway having entry and exit ends, envelope slot means formed in the frame communicating with the passageway entry end, conveyor means on the frame engageable with envelopes deposited through the slot means into the passageway movable in measured increments for conveying said envelopes to the passageway exit end, operating means movable from a first position to a second position and then back to said first position, an actuating plate operably connected to the operating means for movement with the operating means between said first and second positions, a rack pivotally connected to the actuating plate, a rotatable drive gear operably connected with the rack for movement in a first direction by the rack when the operating means is moved from first position to second position and in a second direction by the rack when the operating means is moved from second position to first position, a lost motion engagement member operably connected to the conveyor means for moving the conveyor means in said increments of movement, the lost motion engagement member being operably connected to the drive gear when the drive gear is moved in said second direction moving the conveyor means in one of said increments of movement, the lost motion engagement member being free of operable connection when the drive gear is moved in said first direction, closure means for said slot means movable to open and closed positions, the passageway being accessible through the slot means when the closure means is in open position and inaccessible through the slot means when the closure means is in closed position, the actuating plate having a cam surface terminating at one end in a cam recess, a cam roller operably connected to the closure means and operably engaged with said actuating plate cam surface at all times except when the operating means has moved to said second position, said cam roller being aligned with and receivable in the actuating plate cam recess when the operating means is in said second position, the cam roller blocking opening movement of the closure means when the cam roller is engaged with the actuating plate cam surface and being free of blocking said opening movement when the cam roller is aligned with the actuating plate cam recess, and spring means operably connected to the closure means normally urging said closure means toward open position.

12. Envelope depository construction as defined in claim 11 in which a timing cam plate is operably connected to the conveyor means for movement with said conveyor means; in which the timing cam plate has a cam surface and a cam recess; in which a second cam roller is operably connected to the closure means engageable with the timing cam plate cam surface during movement of the conveyor means through one of said measured increments of movement and aligned for engagement in the timing cam plate cam recess at the start of one of the conveyor means measured increments of movement; and in which said second cam roller blocks opening movement of the closure means when said second cam roller is engaged with the timing cam plate cam surface thereby blocking opening movement of the closure means anytime the conveyor means is intermediate one of said measured increments of movement and independent of any position and movement of the operating means.

13. Envelope depository construction as defined in claim 11 in which the conveyor means includes longitudinally spaced sprocket members rotatably mounted on the frame adjacent the passageway and at the passageway entry and exit ends, continuous chain means operably engaged over and between the sprocket members, longitudinally spaced generally laterally extending paddles mounted on the chain means and movable into and longitudinally through the passageway from entry to exit ends upon rotation of the sprocket members, said paddles being engageable with envelopes deposited through the slot means into the passageway for conveying said en-

velopes to the passageway exit end, and at least one of the conveyor means paddles being in the passageway at all times; in which the frame walls have longitudinally extending rail means mounted thereon and extending into the passageway telescoped by the paddles when said paddles extend into the passageway; and in which the paddles and rail members co-operate to block passage of an envelope past said paddles while said paddles are in the passageway.

14. Envelope depository construction including a frame having walls forming a passageway generally longitudinally therethrough, the passageway having entry and exit ends, envelope slot means formed in the frame communicating with the passageway entry end, conveyor means on the frame having longitudinally spaced portions engageable with envelopes deposited through the slot means into the passageway movable for conveying said envelopes to the passageway exit end, at least one of the conveyor means portions being in the passageway at all times, means on the conveyor means portions and means on the frame walls interengaging one into the other while said conveyor means portions are in said passageway for blocking passage of an envelope past said conveyor means portions while said conveyor means portions are in said passageway, operating means for moving the conveyor means portions in increments of movement, closure means for said slot means movable to open and closed positions, the passageway being accessible through the slot means when the closure means is in open position and inaccessible through the slot means when the closure means is in closed position, the operating means being movable between first and second positions, the operating means being operably connected to the conveyor means portions for moving the conveyor means portions through one of said increments of movement during movement of the operating means from second to first position, the operating means being free of operable connection with the conveyor means portions during movement of the operating means from first to second position, closure control means operably connected to the operating means and closure means for opening the closure means when the operating means is moved to second position and the conveyor means portions are in position to start one of said increments of movement, said closure control means blocking opening movement of the closure means during movement of the operating means from second to first position, timing control means operably connected to the conveyor means portions and closure means for blocking opening of the closure means when the conveyor means portions are intermediate one of said increments of movement independent of any position and movement of the operating means, and the timing control means being free of blocking opening movement of the closure means when the conveyor means portions are in position to start one of said increments of movement.

15. Envelope depository construction including a frame having walls forming a passageway generally longitudinally therethrough, the passageway having entry and exit ends, envelope slot means formed in the frame communicating with the passageway entry end, conveyor means on the frame engageable with envelopes deposited through the slot means into the passageway movable for conveying said envelopes to the passageway exit end, operating means movable from a first position to a second position and then back to said first position, lost motion drive means operably connecting the operating means to the conveyor means for moving said conveyor means in measured increments of movement during the movement of the operating means from second position to first position and interrupting the operable connection between the operating means and the conveyor means during movement of the operating means from first position to second position; said lost motion drive means including a rack pivotally connected to the operating means, a rotatable drive gear operably connected with the rack for movement in a first direction by the rack when the operating means is moved from first position to second position and in a second direction by the rack when the operating means is moved from second position to first position, a lost motion engagement member operably connected to the conveyor means for moving the conveyor means, the lost motion engagement member being operably connected to the drive gear when the drive gear is moved in said second direction moving the conveyor means, and the lost motion engagement member being free of operable connection with the drive gear when the drive gear is moved in said first direction.

16. Envelope depository construction including a frame having walls forming a passageway generally longitudinally therethrough, the passageway having entry and exit ends, envelope slot means formed in the frame communicating with the passageway entry end, conveyor means on the frame having longitudinally spaced portions longitudinally movable in a continuous path in the frame passageway from entry to exit ends and then spaced from the passageway from exit to entry ends, said conveyor means portions being engageable with envelopes deposited through the slot means into the passageway for conveying said envelopes to the passageway exit end, at least one of said conveyor means portions being in the passageway at all times in the path of travel from the passageway entry to exit ends and at least one of said conveyor means portions being spaced from said passageway at all times in the path of travel from the passageway exit to entry ends, and means on the conveyor means portions and means on certain of the frame walls interengaging one into the other when said conveyor means portions are in the passageway in the path of travel from the passageway entry to exit ends and when said conveyor means portions are spaced from the passageway in the path of travel from the passageway exit to entry ends for blocking passage of an envelope past said conveyor means portions while said conveyor means portions are in said passageway and while said conveyor means portions are spaced from said passageway.

17. Envelope depository construction as defined in claim 16 in which operating means is normally operably connected in timed relationship with the conveyor means for moving the conveyor means portions in measured increments of movement, the operating means being movable in said normal timed relationship from a first position to a second position and then back to said first position, the operating means being free of driving connection with the conveyor means portions during movement from first position to second position, and the operating means being operably connected for driving the conveyor means portions through one of said increments of movement during movement of the operating means from second position to first position; and in which timing means is operably connected to the operating means for blocking complete movement of the operating means from second to first position when said operating means and conveyor means portions are out of said normal timed relationship.

18. Envelope depository construction including a frame having walls forming a passageway generally longitudinally therethrough, the passageway having entry and exit ends, envelope slot means formed in the frame communicating with the passageway entry end, conveyor means on the frame having longitudinally spaced generally laterally extending paddles movable in a continuous path in the frame passageway from entry to exit ends and then spaced from the passageway from exit to entry ends, said conveyor means paddles being engageable with envelopes deposited through the slot means into the passageway for conveying said envelopes to the passageway exit end, at least one of said conveyor means paddles being in the passageway at all times in the path of travel from the passageway entry to exit ends and at least one

said conveyor means paddles being spaced from said passageway at all times in the path of travel from the passageway exit to entry ends, and means on the conveyor means paddles and means on certain of the frame walls interengaging one into the other when said conveyor means paddles are in the passageway in the path of travel from the passageway entry to exit ends and when said conveyor means paddles are spaced from the passageway in the path of travel from the passageway exit to entry ends for blocking passage of an envelope past said conveyor means paddles while said conveyor means paddles are in said passageway and while said conveyor means paddles are spaced from said passageway.

19. Envelope depository construction as defined in claim 18 in which the means on certain of the frame walls are rail members extending into the passageway in the path of travel of the conveyor means paddles from the passageway entry to exit ends and rail members extending into the path of travel of the conveyor means paddles spaced from the passageway from the passageway exit to entry ends; and in which the means on the conveyor means paddles are slots formed in the conveyor means paddles receiving the frame wall rail members while the conveyor means paddles are in the passageway in the path of travel from the passageway entry to exit ends and while said conveyor means paddles are spaced from the passageway in the path of travel from the passageway exit to entry ends.

20. Envelope depository construction as defined in claim 18 in which operating means is normally operably connected in timed relationship with the conveyor means for moving the conveyor means paddles in measured increments of movement, the operating means being movable in said normal time relationship from a first position to a second position and then back to said first position, the operating means being free of driving connection with the conveyor means paddles during movement from first position to second position, and the operating means being operably connected for driving the conveyor means paddles through one of said increments of movement during movement of the operating means from second position to first position; and in which timing means is operably connected to the operating means for blocking complete movement of the operating means from second to first position when said operating means and conveyor means paddles are out of said normal timed relationship.

21. Envelope depository construction including a frame having walls forming a passageway generally longitudinally therethrough, the passageway having entry and exit ends, envelope slot means formed in the frame communicating with the passageway entry end, longitudinally spaced sprocket members rotatably mounted on the frame adjacent the passageway and at the passageway entry and exit ends, continuous chain means operably engaged over and between the sprocket members, longitudinally spaced laterally extending paddles mounted on the chain means movable into and longitudinally through the passageway from entry to exit ends and then spaced from the passageway longitudinally from exit to entry ends upon rotation of the sprocket members, said paddles being engageable with envelopes deposited through the slot means into the passageway for conveying said envelopes to the passageway exit end, at least one of said paddles being in the passageway at all times in the path of travel from the passageway entry to exit ends and at least one of said paddles being spaced from said passageway at all times in the path of travel from the passageway exit to entry ends, certain of the frame walls having longitudinally extending rail means mounted thereon and extending into the passageway in the path of travel of said paddles from the passageway entry to exit ends and extending into the path of travel of said paddles spaced from the passageway exit to entry ends, slot means formed in the paddles receiving said rail means when said paddles are in the passageway in the path of travel from the passageway entry to exit ends and when said paddles are in the path of travel spaced from the passageway from the passageway exit to entry ends, and the paddles and rail means cooperating to block passage of an envelope past said paddles when said paddles are in both said paths of travel.

22. Envelope depository construction as defined in claim 21 in which the path of travel of the paddles in the passageway from the passageway entry to exit ends is spaced below the path of travel of said paddles spaced from the passageway from the passageway exit to entry ends; in which the paddles extend downwardly into the path of travel in the passageway from the passageway entry to exit ends and extend upwardly into the path of travel spaced from the passageway from the passageway exit to entry ends; and in which the rail means are rail members extending upwardly into the paddle slot means when the paddles are in the passageway in the path of travel from the passageway entry to exit ends and are rail members extending downwardly into the paddle slot means when the paddles are in the path of travel spaced above the passageway from the passageway exit to entry ends.

References Cited in the file of this patent

UNITED STATES PATENTS

150,500	White	May 5, 1874
494,050	Anderson	Mar. 21, 1893
1,536,331	Conant	May 5, 1925
2,572,003	Binns	Oct. 23, 1951
2,599,173	Hamilton	June 3, 1952
2,771,885	Walker	Nov. 27, 1956