

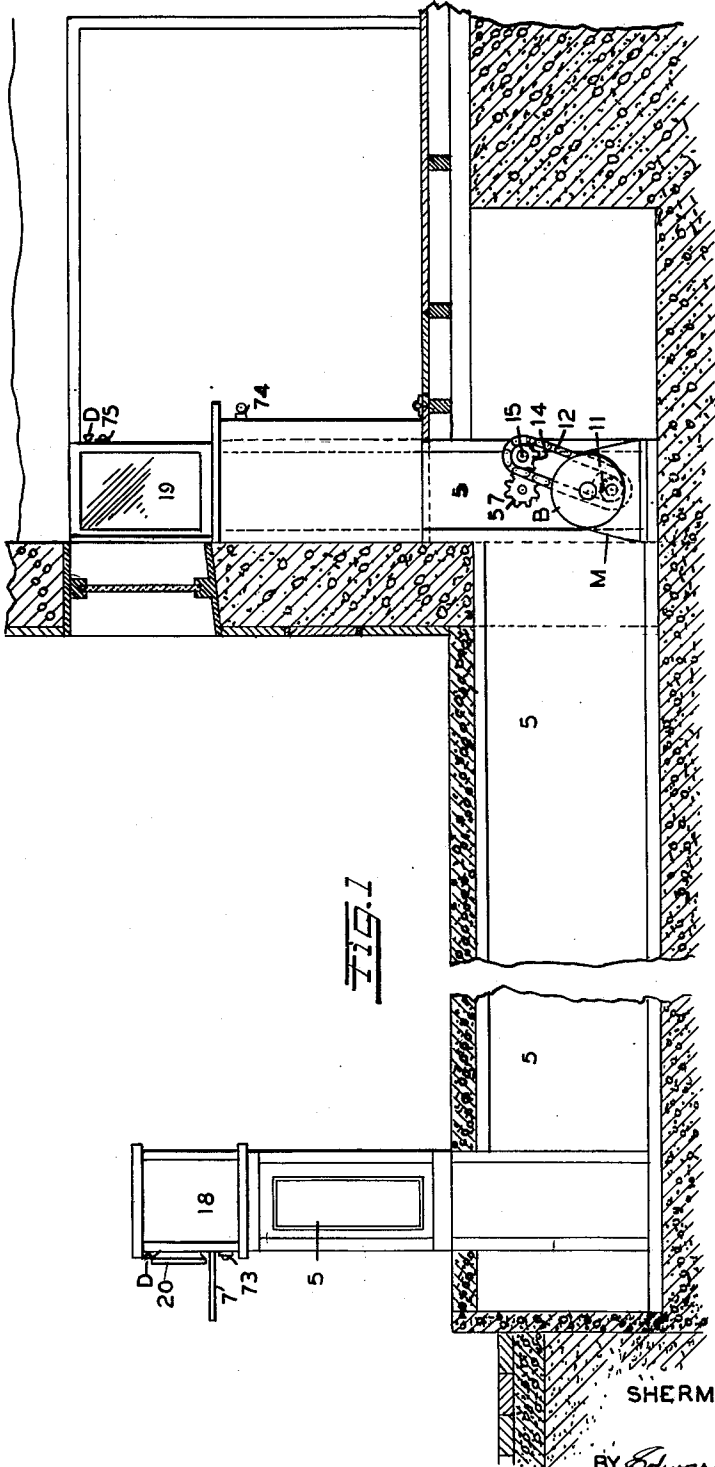
Oct. 14, 1952

S. E. McCLINTOCK
DRIVE-IN SERVICE DEVICE

2,613,762

Filed July 9, 1949

5 Sheets-Sheet 1



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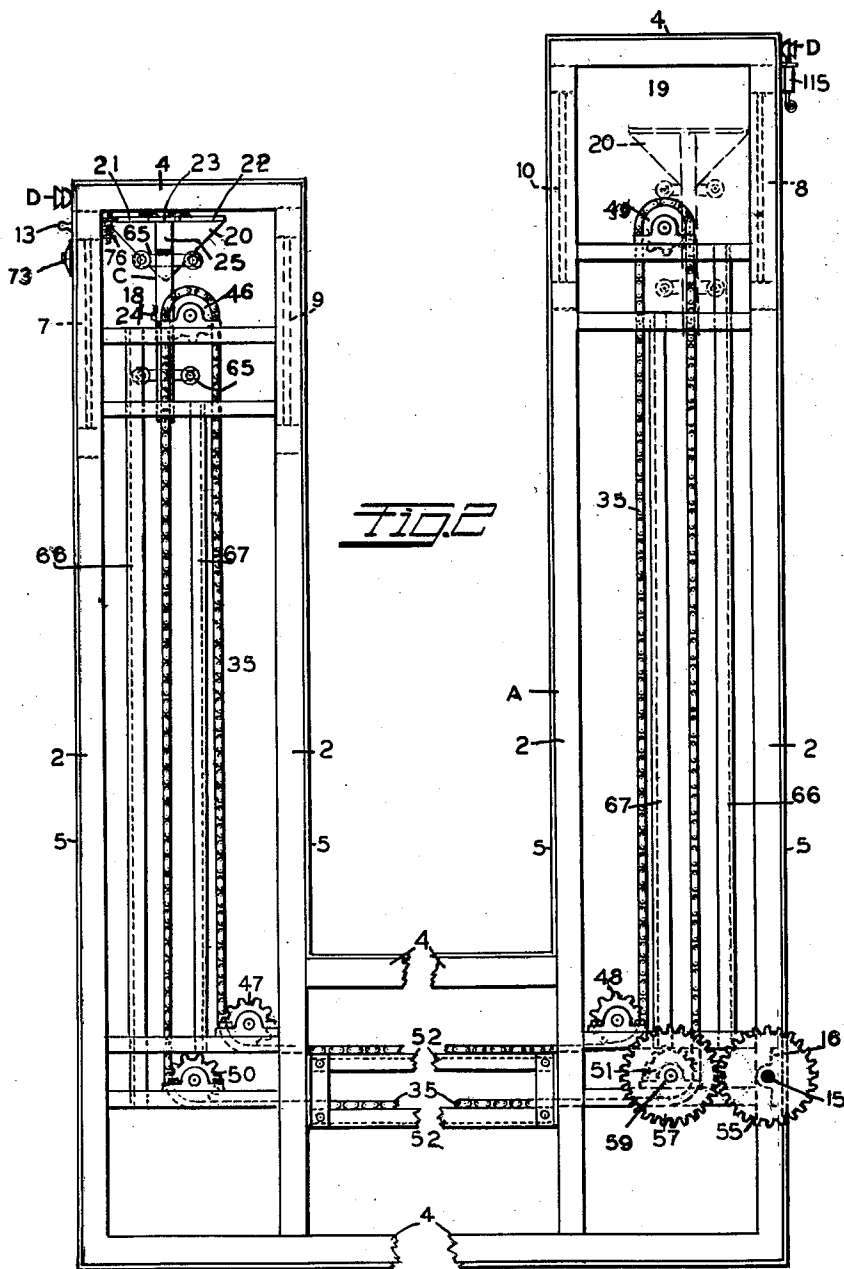
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5 Sheets-Sheet 2



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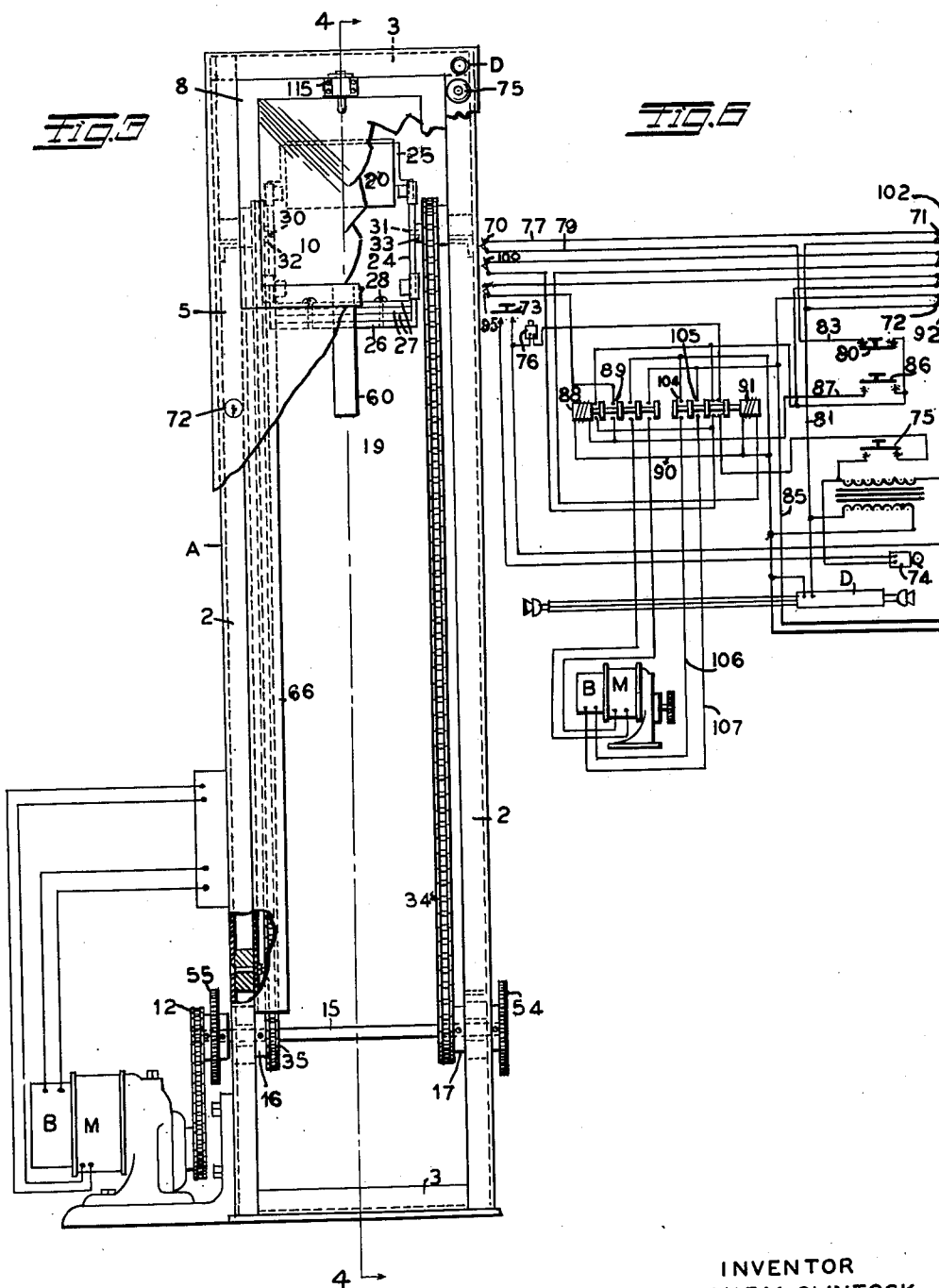
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5 Sheets-Sheet 3



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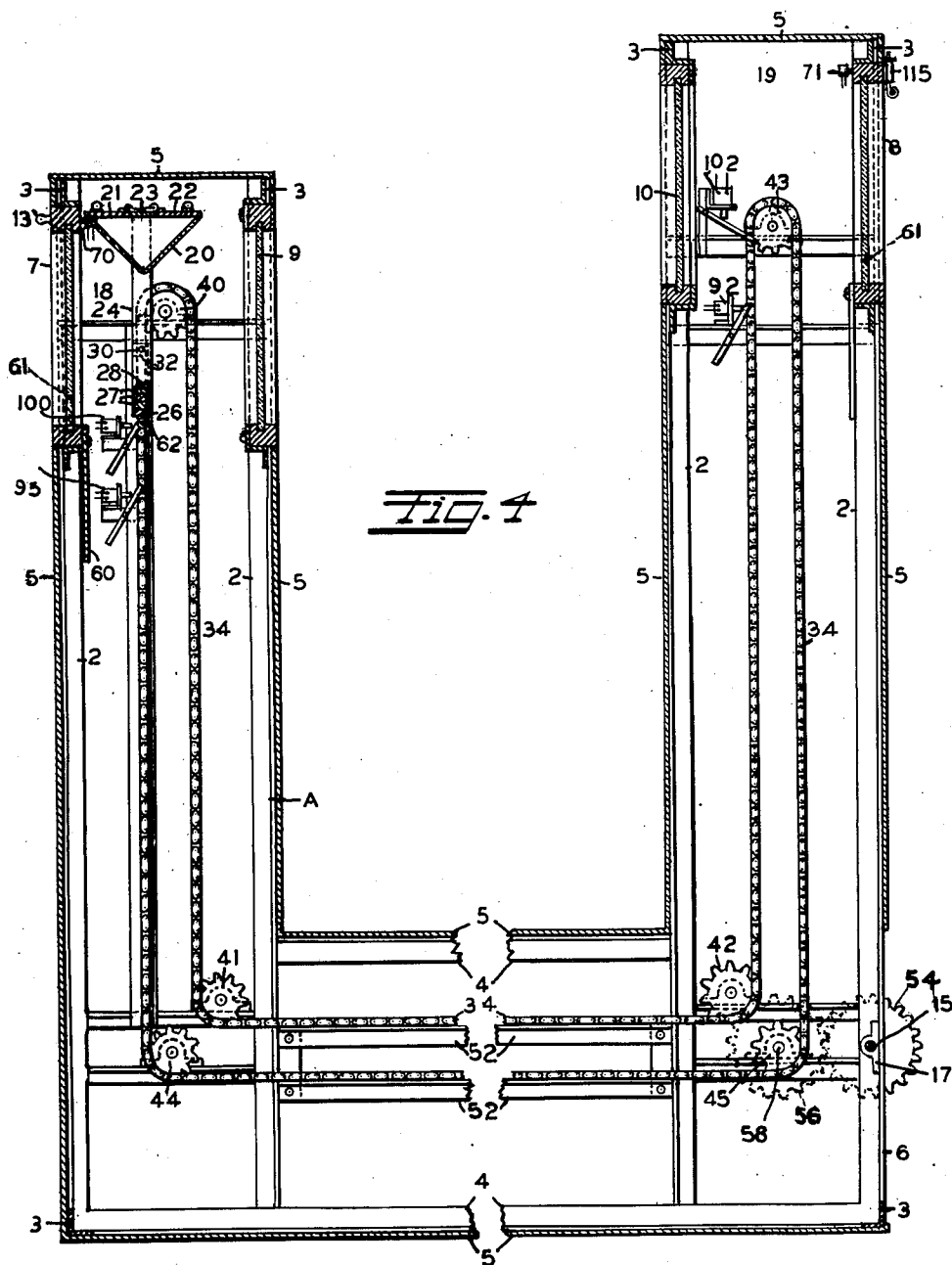
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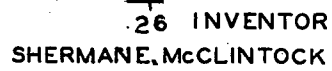


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2,613,762

5 Sheets-Sheet 5



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UNITED STATES PATENT OFFICE

2,613,762

DRIVE-IN SERVICE DEVICE

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11 Claims. (Cl. 186—1)

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This invention relates to a conveyor apparatus primarily for use as a banking or store service, whereby, business may be quickly dispatched between a customer in a parked car at a curb, in a parking lot, or other parking location, and a teller in a bank, a clerk in a store, or other person in a spaced location.

The primary object of this invention is provision of a conveyor apparatus having tower-like end portions one of which I will term the customer or parking tower which has an opening, positioned to face a parked car, with an enclosure for said opening at approximately auto door window distance from curb or ground level, the opposite tower, which I will term the teller, clerk or operator tower, having a similar window opening facing the teller, clerk or operator and at a suitable distance from a building floor level, said tower-like portions being connected by a structure for placement under ground as between said tower portions and forming a tunnel therebetween, said apparatus housing a carriage and conveying means therefor to and from said tower like portions, via said tunnel.

Other objects of this invention will become apparent as the detailed description thereof proceeds.

This invention resides substantially in the combination, arrangement and relative location of parts all in accordance with the disclosure herein.

In the accompanying drawings,

Figure 1 shows an embodiment of the invention, illustrating one form of positioning the tower-like portions and their connecting underground tunnel arrangement, and showing the customer tower door open and the receptacle tipped outward for loading or unloading thereof.

Figure 2 is a side elevation of this invention with the enclosure wall removed, and in dash lines illustrating carriage position in the operator tower.

Figure 3 is an end view with a portion of the enclosure wall removed, with carriage in the operator tower.

Figure 4 is a section on line 4—4 Figure 3.

Figure 5 is a diagrammatic illustration of tower door tilting means for the receptacle.

Figure 6 is a circuit arrangement for controlling the actuation of this conveyor, not shown in structural views for clarity of same.

Figure 7 is a plan view of an alternate form of receptacle for use with this apparatus.

Figure 8 is a side elevation thereof.

Figure 9 is an end elevation thereof.

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The true nature and manner of use of a conveyor in accordance with this invention will be best understood by detailed description of the structure and actuating means thereof shown in the drawings in an illustrative sense.

Now referring to the drawings A indicates, in general, a frame work which may be conveniently built in skeleton form of angle material, as shown, however this is not to be construed as a limitation, said frame having uprights 2, transverse and longitudinal members 3 and 4, respectively, in fixed engagement with said upright members, and, within the bounds of said frame work, auxiliary frame members primarily for supporting means for various elements hereinafter described. Said framework is enclosed by enclosure plates 5, with the exception of one lower outer end of the apparatus, as at 6, Figure 4, which is open or may have door enclosure for entrance to conveyor mechanism and especially mechanism in the tunnel portion of the apparatus for the purpose of making repairs and the like, windowpaned door enclosures 7 and 8 in the customer and operator towers 18 and 19, respectively, and window members 9 and 10, respectively, for vision of customer by the teller or clerk who is the operator of the conveyor a factor of extreme value when the conveyor is used in connection with a banking service.

Actuating means for the various elements of this conveyor is driven by a motor M the shaft of which carries sprocket 11, which drives shaft 15, thru means of sprocket chain 12 from sprocket 11 to sprocket 14 mounted on an extended end of the shaft, said shaft having bearing in bearings 16 and 17 mounted on vertical framing adjacent the ends of the shaft.

Conveyance to and from the tower-like portions is by means of a carriage, indicated in general as C, which includes receptacle 20, which preferably is of V-shape so that when it is tilted, as hereinafter defined, whereby one face thereof will be on a substantially horizontal plane for easy access thereto, however this shape is not a limitation as I may desire to modify same, as for example as shown in Figures 7 to 9 inclusive, wherein I retain the V-shape and join to it a rectangular receptacle 29'. In either case the receptacle is of transparent material not as a matter of choice but to give an operator full vision thereof thru windows 9 and 10, a further item of special value when the conveyor is used as a banking service to observe the placement or removal of an item in or from the receptacle, and has top door inclosures 21 and 22 each of

which is hinged to a central transverse top strip 23 by means of spring hinges to retain same in closed position.

Completing the carriage is a yoke member 24 which carries receptacle 20, the upper ends 25 of the yoke branches being angled in and to the receptacle and placed in engagement therewith by means of rivets, screws or like means, lower cross member 26 of the yoke forming a seat for weights 27 which form a counterbalance to the receptacle and are removably fastened in place by screws 28, clips or other suitable means, said counterweight retaining the carriage in vertical position during its conveyance to and from said towers, as the carriage is swingable thru stub shafts 30 and 31 extended outward from opposite branches of the yoke member and having bearing in bearing blocks 32 and 33, respectively, said bearing blocks being clipped on or otherwise secured to oppositely disposed links in spaced parallel endless sprocket chains 34 and 35, however to further elimination of lateral swing of carriage C during vertical travel thereof I provide rolling contacts 65 engaged lateral to and with the inner face of one of the yoke branches which ride between tracks 66 and 67, inner track 67 being shortened at the upper end thereof to not interfere with tilting of the carriage.

For directional guidance of sprocket chain 34 I use sprocket idlers 40, 41, 42, 43, and 44 and driven sprocket 45, and for guidance for sprocket chain 35 sprocket idlers 46, 47, 48, 49, and 50 and driven sprocket 51, all idlers having bearing thru their respective stub shaft with bearings removably engaged with and supported by auxiliary frame members as shown in the drawings.

Actuating means for said sprocket chains from driven shaft 15 is thru gears 54 and 55 mounted on said shaft and meshed with gears 56 and 57, respectively, mounted on the outer ends of shafts 58 and 59, for rotation of said shafts and sprockets 45 and 51, respectively, carried on the inner ends of said shafts and keyed or otherwise secured thereto, and to relieve downward strain on the sprocket chains as the conveyor passes thru the tunnel portion angle chain rests 52 are installed between inner upright frame members 2.

Delivery to or removal from receptacle 20, after conveyance to either tower is by means of tilting the receptacle downward and toward a doorway to the respective tower. On reference to Figure 5 it will be observed that this is accomplished by means of a lift member 60 which is engaged transversely centrally of the lower edge of a door frame and which, as a tower door is opened by means of a pull knob 13, in opening door 7 or catch 115 in opening door 8 swinging the same outward on its pivot hinge 6, is swung upward contacting a roller extension 62 to yoke 24 thereby urging the lower portion of the yoke inward from its pivotal points and causing a tilting of the upper portion outward and downward.

Actuating means for this conveyor is primarily electrically controlled and Figure 6 illustrates a circuit for this purpose, however this circuit should not be considered as a limitation as other circuits may be arranged including a circuit, whereby travel of the conveyor may be reversed thus limiting conveyor travel to the upper or lower longitudinal sprocket chain plane and vertical planes in the tower portions directly con-

nected therewith. In defining the electrical control, as shown in Figure 6, it will be presumed that the conveyor is in normal inactive position wherein the carriage is located in the customer tower having been left there on completion of a previous transaction, and, under this inactive relationship of elements, doors 7 and 8 leading to customer and operator towers 18 and 19 respectively are closed, closing respective door switches 70 and 71, engaged therewith. To start a day's business the operator closes key lock switch 72. A cycle of operation is commenced by a customer pressing switch button 73, closing the circuit to audible or visible element 74, such as a bell, buzzer, or light, located within hearing range or sight of the operator, to which the operator responds by pressing switch button 75 closing the circuit to magnetic door release 76 thereby unlocking door 7 which the customer swings downward and outward to open, breaking contact of door switch 70, and as previously described, tilting the carriage outward. On completion of his business the customer closes door 7 thereby closing the plunger door switch 70 and circuit for motor operation, on closing of switch 86 by the operator, to transfer carriage to operator tower 18, thru conductor 77, operator door switch 71, which is closed during travel of the carriage or until operator opens his door, and conductor 79, including emergency stop switch 80, conductor 81 thru key switch 72, conductor 83 to one side of service line 85, the above circuits remain closed while the operator closes switch 86 completing the circuit to motor conductor 87, however closing of switch 86 is momentary and causes energizing of magnetic contactor 88 closing contacts 89 which thru line 90 energizes brake magnetic contactor 91 thru interlocker contactors placing motor in operation and means associated with said motor for conveyance of the carriage to the operator tower, and releasing the motor brake.

As the carriage approaches its normal loading or unloading position in tower 19 the bearing block 32 assumes the role of a wiper and as it encounters the trigger of motor limit switch 92 it urges said trigger upward breaking contact of said switch, and after passing same makes similar contact with the trigger of motor brake limit switch 102 opening same and thereby braking the motor by de-energizing the brake release coil thru conductors 104 and 105, thru lines 106 and 107 respectively, and closing contacts 108 of magnetic contactor 91.

The carriage having reached its normal position in the operator tower, shown in dash lines in Figure 2, the operator manually releases door catch 115 and swings door 8 outward, breaking contact of operator door switch 71 and tilting the carriage, as previously described and on completion of loading or unloading same said door is closed closing switch 71 after which the operator closes switch 86 completing the circuit to the motor, as described, and the carriage in a manner previously defined is returned to customer tower 18, however, this time bearing block 32 wipes motor limit switch 95 and thereafter motor brake limit switch 100 stopping the carriage in its normal position in the customer tower, as shown in Fig. 2.

The purpose of emergency switch 80 is to permit an operator to stop the carriage at any point in its line of movement, however to return carriage to starting tower it must first complete its travel to the oppositely disposed tower and return

therefrom. This, aside from allowing for repairs or adjustment to the conveyor mechanism, prevents tampering with carriage contents when once placed in movement for delivery to the opposite tower.

As a matter of convenience there is installed with the conveyor and above-described circuit an inter-communicating system, indicated in general as D.

While I have shown and described the structure of this conveyor as for underground communication it seems obvious that should it be advisable, or necessary due to underground obstruction, the conveyor with minor reversing changes and modifications, such as repositioning pivotal hinges 61 of tower doors 7 and 8, is invertible, the longitudinal portion of the conveyor housing becoming an overpass.

I desire it understood that this invention is not limited to the particular application or precise construction illustrated herein, but that various applications, modifications and variations may be made without departure from the spirit and scope of the invention, and I deem myself entitled to all such applications, modifications and variations as come within the scope of claims appended hereto.

What is claimed:

1. Conveyor apparatus for use as a banking or store service device comprising a vertically mounted customer tower, a vertically mounted service tower and a passage connecting said towers and forming with said towers a passageway extending from adjacent the top of one tower to adjacent the top of the other tower, conveyor means located in said passageway and extending from adjacent the top of one tower to adjacent the top of the other tower, a receptacle, means pivotally mounting said receptacle on said conveyor means, track means in said passage and said towers, said receptacle having anti-friction means for engaging said track means, a door adjacent the top of said customer tower, said track means having a discontinuous portion adjacent said door, and means for causing the receptacle to swing on its pivotal mounting when the anti-friction means of said receptacle is opposite the said discontinuous portion of said track, and when said receptacle and said door are in juxtaposed position.

2. Conveyor apparatus for use as a banking or store service device comprising a vertically mounted customer tower, a vertically mounted service tower and a passage connecting said towers and forming with said towers a passageway extending from adjacent the top of one tower to adjacent the top of the other tower, conveyor means located in said passageway and extending from adjacent the top of one tower to adjacent the top of the other tower, a receptacle, means pivotally mounting said receptacle on said conveyor means, track means in said passage and said towers, said receptacle having anti-friction means for engaging said track means, a door adjacent the top of said customer tower, said track means having a discontinuous portion adjacent said door, and means adapted for engagement with said receptacle and causing the same to swing on its pivotal mounting when the anti-friction means of said receptacle is opposite the said discontinuous portion of said track, and when said receptacle and said door are in juxtaposed position, said receptacle engagement means being mounted on said door whereby the operation

of said door causes tilting of said receptacle when they are in juxtaposed position.

3. Conveyor apparatus for use as a banking or store service device comprising a vertically mounted customer tower, a vertically mounted service tower and a passageway connecting said towers and forming with said towers a passageway extending from adjacent the top of one tower to adjacent the top of the other tower, conveyor means located in said passageway and extending from adjacent the top of one tower to adjacent the top of the other tower, a receptacle, means pivotally mounting said receptacle on said conveyor means, track means in said passage and said towers, said receptacle having anti-friction means for engaging said track means, a door adjacent the top of said customer tower, said track means having a discontinuous portion adjacent said door, and means including a member on said receptacle for causing the receptacle to swing on its pivotal mounting when the anti-friction means of said receptacle is opposite the said discontinuous portion of said track, and when said receptacle and said door are in juxtaposed position, said towers being positioned opposite to each other and each having transparent window means.

4. Conveyor apparatus for use as a banking or store service device comprising a vertically mounted customer tower, a vertically mounted service tower and a passage connecting said towers and forming with said towers a passageway extending from adjacent the top of one tower to adjacent the top of the other tower, conveyor means located in said passageway and extending from adjacent the top of one tower to adjacent the top of the other tower, a receptacle, means pivotally mounting said receptacle on said conveyor means, track means in said passage and said towers, said receptacle having anti-friction means for engaging said track means, a door adjacent the top of said customer tower, said track means having a discontinuous portion adjacent said door, and means adapted for engagement with said receptacle and causing the same to swing on its pivotal mounting when the anti-friction means of said receptacle is opposite the said discontinuous portion of said track, and when said receptacle and said door are in juxtaposed position, said receptacle engagement means being mounted on said door whereby the operation of said door causes tilting of said receptacle when they are in juxtaposed position, said towers being positioned opposite to each other and each having transparent window means.

5. Conveyor apparatus for use as a banking or store service device comprising a vertically mounted customer tower, a vertically mounted service tower and a passage connecting said towers and forming with said towers a passageway extending from adjacent the top of one tower to adjacent the top of the other tower, conveyor means located in said passageway and extending from adjacent the top of one tower to adjacent the top of the other tower, a receptacle, means pivotally mounting said receptacle on said conveyor means, track means in said passage and said towers, said receptacle having anti-friction means for engaging said track means, a door adjacent the top of said customer tower, said track means having a discontinuous portion adjacent said door, and means for causing the receptacle to swing on its pivotal mounting when the anti-friction means of said receptacle is opposite the said discontinuous portion of said track, and when said receptacle and said door are in juxtaposed position, said towers being positioned opposite to each other and each having transparent window means.

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posed position, said towers being positioned opposite to each other and each having transparent window means, said transparent window means including said door.

6. Conveyor apparatus for use as a banking or store service device comprising a vertically mounted customer tower, a vertically mounted service tower and a passage connecting said towers and forming with said towers a passageway extending from adjacent the top of one tower to adjacent the top of the other tower, conveyor means located in said passageway and extending from adjacent the top of one tower to adjacent the top of the other tower, a receptacle, means pivotally mounting said receptacle on said conveyor means, track means in said passage and said towers, said receptacle having anti-friction means for engaging said track means, a door adjacent the top of said customer tower, said track means having a discontinuous portion adjacent said door, and means including a member on said receptacle for causing the receptacle to swing on its pivotal mounting when the anti-friction means of said receptacle is opposite the said discontinuous portion of said track, and when said receptacle and said door are in juxtaposed position, electrical means for driving said conveyor means and electrical control means including brake means for discontinuing the electrical drive means and applying said brake means when said receptacle is opposite to the door on said customer tower.

7. Conveyor apparatus for use as a banking or store service device comprising a vertically mounted customer tower, a vertically mounted service tower and a passage connecting said towers and forming with said towers a passageway extending from adjacent the top of one tower to adjacent the top of the other tower, conveyor means located in said passageway and extending from adjacent the top of one tower to adjacent the top of the other tower, a receptacle, means pivotally mounting said receptacle on said conveyor means, track means in said passage and said towers, said receptacle having anti-friction means for engaging said track means, a door adjacent the top of said customer tower, said track means having a discontinuous portion adjacent said door, and means adapted for engagement with said receptacle and causing the same to swing on its pivotal mounting when the anti-friction means of said receptacle is opposite the said discontinuous portion of said track, and when said receptacle and said door are in juxtaposed position, said receptacle engagement means being mounted on said door whereby the operation of said door causes tilting of said receptacle when they are in juxtaposed position, electrical means for driving said conveyor means and electrical control means including brake means for discontinuing the electrical drive means and applying said brake means when said receptacle is opposite to the door on said customer tower.

8. Conveyor apparatus for use as a banking or store service device comprising a vertically mounted customer tower, a vertically mounted service tower and a passage connecting said towers and forming with said towers a passageway extending from adjacent the top of one tower to adjacent the top of the other tower, conveyor means located in said passageway and extending from adjacent the top of one tower to adjacent the top of the other tower, a receptacle, means pivotally mounting said receptacle on said conveyor means, track means in said pas-

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sage and said towers, said receptacle having anti-friction means for engaging said track means, a door adjacent the top of at least one of said towers, said track means having a discontinuous portion adjacent said door, and means for causing the receptacle to swing on its pivotal mounting when the anti-friction means of said receptacle is opposite the said discontinuous portions of said track, and when said receptacle and said door are in juxtaposed position, said receptacle having lid means thereon.

9. Conveyor apparatus for use as a banking or store service device comprising a vertically mounted customer tower, a vertically mounted service tower and a passage connecting said towers and forming with said towers a passageway extending from adjacent the top of one tower to adjacent the top of the other tower, conveyor means located in said passageway and extending from adjacent the top of one tower to adjacent the top of the other tower, a receptacle, means pivotally mounting said receptacle on said conveyor means, track means in said passage and said towers, said receptacle having anti-friction means for engaging said track means, a door adjacent the top of at least one of said towers, said track means having a discontinuous portion adjacent said door, and means for causing the receptacle to swing on its pivotal mounting when the anti-friction means of said receptacle is opposite the said discontinuous portion of said track, and when said receptacle and said door are in juxtaposed position, said receptacle having a pair of pivoted lids whereby access may be had to the same from either the customers' or the service tower.

10. Conveyor apparatus for use as a banking or store service device comprising a vertically mounted customer tower, a vertically mounted service tower and a passage connecting said towers and forming with said towers a passageway extending from adjacent the top of one tower to adjacent the top of the other tower, conveyor means located in said passageway and extending from adjacent the top of one tower to adjacent the top of the other tower, a receptacle, means pivotally mounting said receptacle on said conveyor means, track means in said passage and said towers, said receptacle having anti-friction means for engaging said track means, a door adjacent the top of at least one of said towers, said track means having a discontinuous portion adjacent said door, and means for causing the receptacle to swing on its pivotal mounting when the anti-friction means of said receptacle is opposite the said discontinuous portion of said track, and when said receptacle and said door are in juxtaposed position, said receptacle having a central transverse strip and a pair of pivoted lids mounted on said strip.

11. Conveyor apparatus for use as a banking or store service device comprising a vertically mounted customer tower, a vertically mounted service tower and a passage connecting said towers and forming with said towers a passageway extending from adjacent the top of one tower to adjacent the top of the other tower, conveyor means located in said passageway and extending from adjacent the top of one tower to adjacent the top of the other tower, a receptacle, means pivotally mounting said receptacle on said conveyor means, track means in said passage and said towers, said receptacle having anti-friction means for engaging said track

means, a door adjacent the top of at least one of said towers, said track means having a discontinuous portion adjacent said door, and means for causing the receptacle to swing on its pivotal mounting when the anti-friction means of said receptacle is opposite the said discontinuous portion of said track, and when said receptacle and said door are in juxtaposed position, said last-named means including a member on said door and a cooperating member on said receptacle whereby the opening of said door will tilt said receptacle when they are in juxtaposed position.

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