(No Model.)

C. E. CHINNOCK.

CASH CARRIER.

No. 345,884. Patented July 20, 1886.

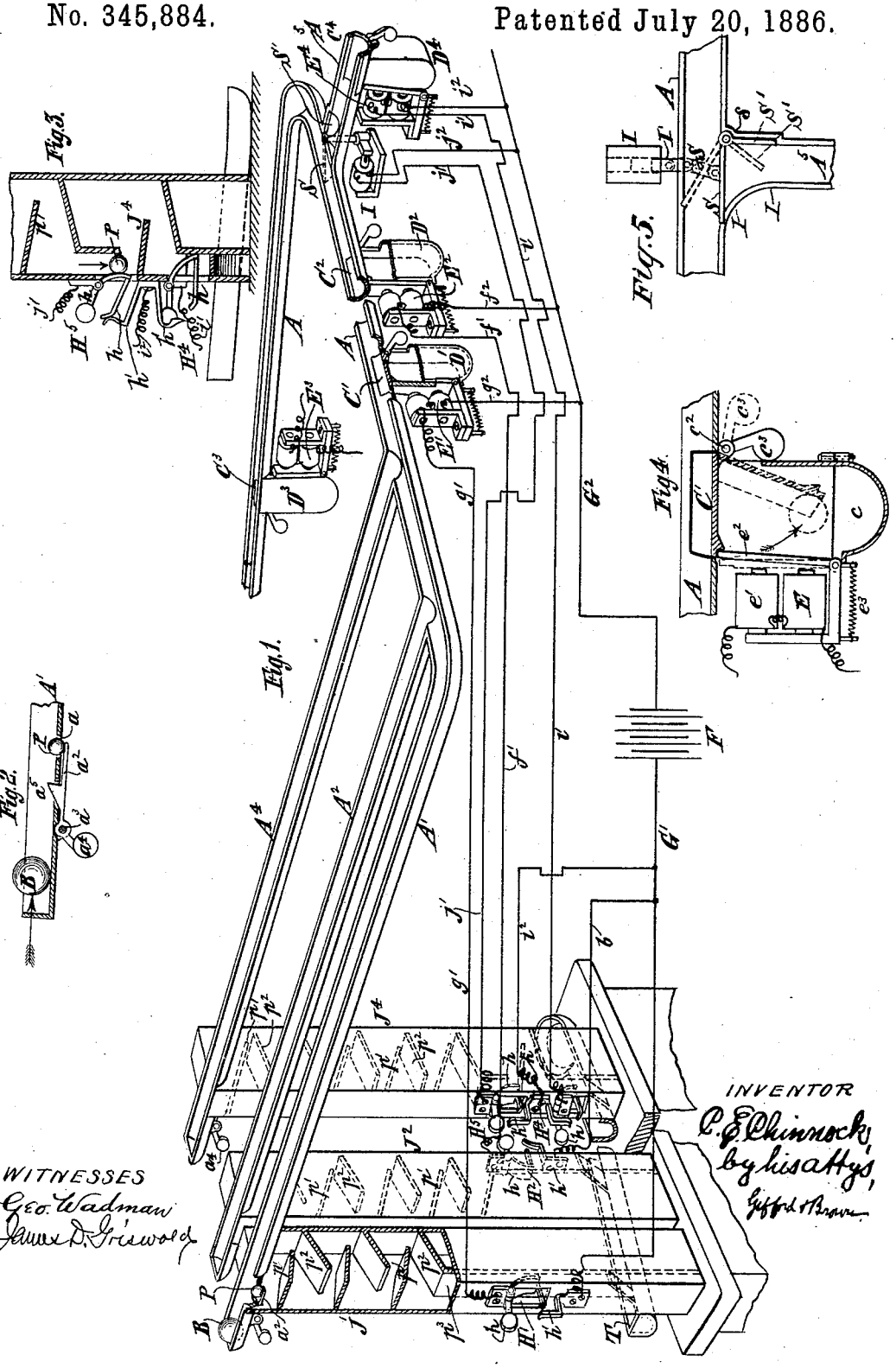

Fig. 1.

Fig. 2.

Fig. 3.

Fig. 4.

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CASH-CARRIER.

SPECIFICATION forming part of Letters Patent No. 345,884, dated July 20, 1886.

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To all whom it may concern:

Be it known that I, CHARLES E. CHINNOCK, of Brooklyn, in Kings county, in the State of New York, have invented a certain new and useful Improvement in Cash Carriers, of which the following is a specification.

Heretofore cash-carriers have been made so that the balls or other vehicles containing and carrying the cash have been released at their destination by means of electro-magnetic apparatus.

The object of my present improvement is to provide for effecting the release of the balls or other vehicles without causing them to act upon the electro-magnetic apparatus. In the cash-carrier which I have devised the electro-magnetic apparatus whereby the release of the balls or other vehicles is effected I operate from the cashier's desk, whence the balls or other vehicles are transmitted.

I will describe in detail a cash-carrier embodying my improvement, and then point out the various novel features in claims.

In the accompanying drawings, Figure 1 is a perspective view of a cash-carrier embodying my improvement. Fig. 2 is a vertical section of a portion of the same. Fig. 3 is a vertical section of another portion of the same, whereby the operation of the electro-magnetic apparatus is controlled. Fig. 4 is a vertical section of a portion of the cash-carrier, illustrating the manner in which the balls or other vehicles carrying the cash will be released on arriving at their destination. Fig. 5 is a plan or top view of a portion of the cash-carrier comprising a switch.

Similar letters of reference designate corresponding parts in all the figures.

A designates a track, which is shown as trough-shaped, so as to accommodate a ball-shaped vehicle, B, for carrying cash. The ball-shaped vehicles employed may be of any suitable number. They can all be of one size. Each will consist, preferably, of two hemispherical sections hinged together at one portion and fastened by a catch at an opposite portion. Although I prefer to use these ball-shaped vehicles, yet my improvement is not at all dependent upon their employment, but can be utilized with vehicles of other shapes.

The track A has leading to it branch tracks $A' A^2 A^4$. These branch tracks lead from the cashier's desk in a store or other place, whence change is to be transmitted to the sales-people for customers, and these branch tracks are inclined slightly from the cashier's desk to their junction with the main track A. The main track A is also inclined away from these branch tracks to the places occupied by the sales-people, to whom the cash is to be transmitted from the cashier's desk. There may of course be any desirable number of the branch tracks, although I have shown but three, leading from the cashier's desk to the main track A. The main track A may of course bend around, so as to extend in any desired directions to the places whither the cash-carrying vehicles are destined to go. From this main track there may be any desirable number of branches. I have shown but one, A^5.

It is important that the tracks should be of uniform incline, so that the time which it will take for a ball, B, to travel to any particular place will always be proportional to the distance of that place from the cashier's desk. It may be found advantageous to make the balls B of heavy material, so that the speed at which they will travel shall not be materially varied by the weight of the change that may be placed within them. This would tend to cause them to travel to the required places in uniform periods of time.

I have not illustrated the track whereby the balls B will be caused to travel to the cashier's desk. As my improvement involves nothing new about this track or its appurtenances, I have not deemed it necessary to be illustrated.

$C' C^2 C^3 C^4$ designate traps, which are capable of opening or swinging downwardly to permit the escape of the balls B into pockets or receptacles $D' D^2 D^3 D^4$, arranged below them. The several traps $C' C^2$, &c., are pivoted on pins c^2, and have counterbalancing-weights c^3, whereby they will be raised to their normal positions after having been swung downward. These pockets or receptacles will be provided with doors, which can be opened to enable the balls B to be taken out. I have shown such a door, *c*, in Fig. 4. It is adapted to swing around in a horizontal plane into a position convenient for the removal of a ball. The doors of these pockets or receptacles are to be operated by the sales-people when the

balls pass into them. It must of course be understood that the traps and the pockets or receptacles are to be arranged adjacent to the different counters in a store.

The operation of the traps is controlled by electro-magnetic mechanisms E' E² E³ E⁴. These electro-magnetic mechanisms are all alike. The construction of all may therefore be understood by reference to the enlarged illustration of one given in Fig. 4. Each of these electro-magnetic mechanisms consists of an electro-magnet, e', and an armature therefor, e^2, adapted to swing toward and from the poles of the electro magnet in the ordinary manner. The upper end of the armature normally projects beneath the adjacent traps C' or C², &c., and so supports it. A spring, e^3, keeps the armature normally in this position. Whenever the electro-magnet is energized, the armature is drawn toward it, and thus moved beyond the trap, whereupon the latter is free to swing downward into the position indicated in dotted outlines in Fig. 4. If a ball, B, happens to be above a trap at the time that the latter is allowed to swing downwardly by the movement of the armature beyond it, under the influence of the attractive force of the electro-magnet, the weight of the ball will swing the trap downwardly. The ball will then pass into the adjacent pocket D' or D², &c. After the ball has passed beyond the trap the latter will be swung up into its normal position by the counterbalance-weight c^3, and as the adjacent electro-magnet will then be de-energized its armature will swing beneath the trap and again support it. The electro-magnets will severally be energized only for a moment, as their only function is to release the traps at any desired time.

F is a battery, which supplies the electric current whereby the electro-magnets e' are energized. As shown, main wires G' G² extend from its poles. Branch wires g' g^2 extend from the coils of the electro-magnet of the electro-magnetic mechanism E'. The branch wire g^2 connects with the main wire G², and the branch wire g' connects with one part, h, of a circuit-closing device, H'. The other part, h', of this circuit-closing device is connected with the main wire G'.

The coils of the electro-magnet in the electro-magnetic mechanism E² have extending from them branch wires f' f^2. The branch wire f^2 connects with the main wire G². The branch wire f' extends to one part, h, of a circuit-closing device, H². The other part, h', of this circuit-closing device H² is connected by a branch wire, b, with the main wire G'.

The coils of the electro-magnet in the electro-magnetic mechanism E³ will be connected with the battery G' and a circuit-closing device in substantially the same way as the electro-magnets of the electro-magnetic mechanisms E' and E².

The coils of the electro-magnet in the electro magnetic mechanism E⁴ are connected to branch wires i' i^2. The branch wire i^2 is connected to the main wire G². The branch wire i' is connected with one part, h, of a circuit-closing device, H⁴. The other part, h', of this circuit-closing device is connected by a wire, i^2, with the main wire G'.

At the junction of the main track A and the branch track A⁵ is a switch, S. This may be best understood by reference to the plan or top view, Fig. 5. Normally it occupies such a position that it prevents a ball, B, passing from the track A into the track A⁵, and is in such position as to direct a ball past the track A⁵ along the track A. It has rigidly connected with it an arm, S', and swings upon a pivot, s. When moved into such position that it will extend across the track A, its arm S' will extend across or partly across the track A⁵. The switch may be moved into position to extend across the track A by means of an electro-magnet or solenoid, I. The core I' of this solenoid is pivotally connected to an extension from the switch S. When the solenoid is energized, the switch S will be swung into a position to cross the track A. The switch will then remain in that position, although the solenoid be energized but momentarily. A ball, B, travelling along the track A will then pass into the track A⁵. On coming into contact with the arm S' it will, however, shift the switch into a position to cross the track A⁵ and direct any ball immediately following continuously along the track A. The switch will occupy the latter position until the solenoid shall be again energized. The coils of this solenoid are connected to branch wires j' j^2. The branch wire j^2 is connected with the main wire G². The branch j' is connected with one part, h, of a circuit-closing device, H⁵. The other part, h', of this circuit-closing device is formed integral with the part h' of the circuit-closing device H⁴, and hence is connected by the wire i^2 with the main wire G'.

It will be understood that the operation of the various circuit closing devices will effect the operation of the electro-magnets that are in circuit with them.

The circuit-closing devices are arranged upon chutes J' J² J⁴. These chutes are arranged in vertical positions beneath the branch tracks A' A² A⁴. Each consists of an upright case or box having inclined planes p' p^2 extending from opposite sides nearly across it, so that a ball, B, dropped into one of the chutes will run down one of the incline planes p', and, escaping at the bottom thereof, pass to the nearest incline plane p^2, and from the latter to the second inclined plane, p', and so on. A ball, p, is placed in a recess, a, in each of the branch tracks A' A² A⁴ from the chutes J' J² J⁴, and while there rests upon a trap, a^2. The traps a^2 are pivoted at A³ and provided with counterbalancing-weights a^4, as may be clearly seen by reference to Fig. 2. The counterbalancing-weights a^4 normally maintain them in position to support the balls P. When one of the balls B is started down

one of the tracks A' A^2 A^4, it rolls over the projection a^5, with which the trap a^2 of such track is provided, and depresses this trap, so as to effect the release of the ball P, previously supported thereby. This ball P will then fall down the chute which is beneath such track, passing from one to another of the inclined planes therein, as previously described. The inclined planes of the several chutes extend throughout different portions of the lengths of the chutes, and beneath them in the chutes a vertical passage, p^3, is arranged. The reason why the inclined planes in the chutes are used for different distances is that it will take a ball in one chute a different length of time from the ball in any other chute to escape from the last inclined plane and enter the vertical passage p^3. When in the vertical passage p^3, it passes by the movable part h of one of the circuit-closing devices previously described, and swings it into contact with the fixed part h' thereof, thus effecting the closure of the circuit with which such circuit-closing device is connected.

It is intended that it shall take a ball, P, just such time to descend to the circuit-closing device of any chute as it will take a ball, B, to pass to the trap or switch controlled by the circuit-closing device—as, for instance, a ball, P, descending through the chute J' will effect the closure of the circuit-closing device H' just in advance of the time that a ball, B, placed in the branch track A', will arrive over the trap C'; consequently the trap C' will have been released, so that the ball B can drop into the pocket D'.

The chute J^4 has two circuit-closing devices, H^4 H^5, because a ball, P, passing through this chute has to first effect the closure of the circuit closing device H^5 to effect the operation of the solenoid I, in order that the switch S shall direct a ball, B, placed in the track A^4, and passing thence into the track A, from the latter into the track A^5, and subsequently as to effect the closure of the circuit-closing device H^4, in order that the trap C^4 may be released to permit the ball B on arriving over the latter to drop into the pocket D^4.

The operation of the circuit-closing device may be best understood by reference to Fig. 3.

The balls P, after having passed the circuit-closing devices of the several chutes in which they are used, pass into a trough, T, from which they may be taken for use again.

The chutes, with their inclined planes and balls P, are in effect time mechanisms, because they determine the time at which the circuit-closing devices shall operate.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In a cash-carrier, the combination of inclined tracks, traps in said tracks, electro-magnetic mechanisms for controlling the traps, and time mechanisms for determining the periods at which the electro-magnetic mechanisms shall operate.

2. In a cash-carrier, the combination of inclined tracks, traps in said tracks, electro-magnetic mechanisms for controlling the traps, circuit-closing devices for the electro-magnetic mechanisms, and chutes having inclined planes for receiving balls whereby the circuit-closing devices may be operated.

3. In a cash-carrier, the combination of an inclined track, a switch at the junction of two tracks, electro magnetic mechanism for operating the switch, and time mechanism for determining the periods at which the switch shall be operated.

4. In a cash-carrier, the combination of an inclined track, a chute, as J', having inclined planes, a recess, as a, in track, a trap, as a^2, provided with a projection, as a^5, extending up through the track, and a counter-balance for said traps.

5. In a cash-carrier, the combination of inclined tracks, traps in said tracks, electro-magnetic mechanisms for controlling the traps, and time mechanisms serving to determine the periods at which the electro-magnetic mechanisms shall operate, and having releasing devices extending into the paths traveled by the cash-carrying vehicles.

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Witnesses:
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