(No Model.) 3 Sheets—Sheet 1.

G. H. SPRING.

CASH CARRIER.

No. 303,464. Patented Aug. 12, 1884.

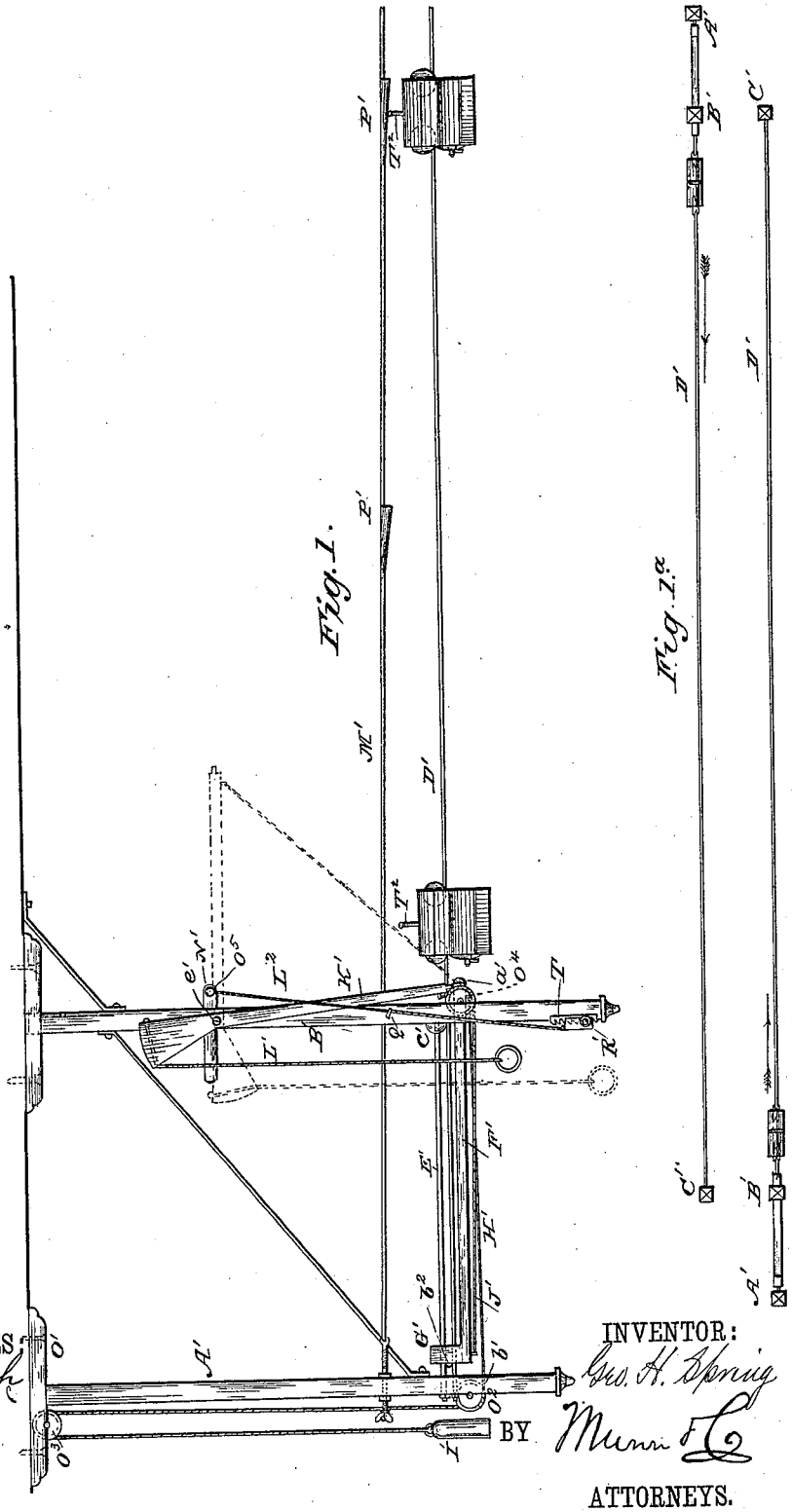


Fig. 1.

Fig. 1a.

WITNESSES:
Fred. G. Dieterich
Edw. A. Byrne.

INVENTOR:
Geo. H. Spring
BY Munn & Co
ATTORNEYS.

(No Model.) 3 Sheets—Sheet 2.

G. H. SPRING.

CASH CARRIER.

No. 303,464. Patented Aug. 12, 1884.

Fig. 2.

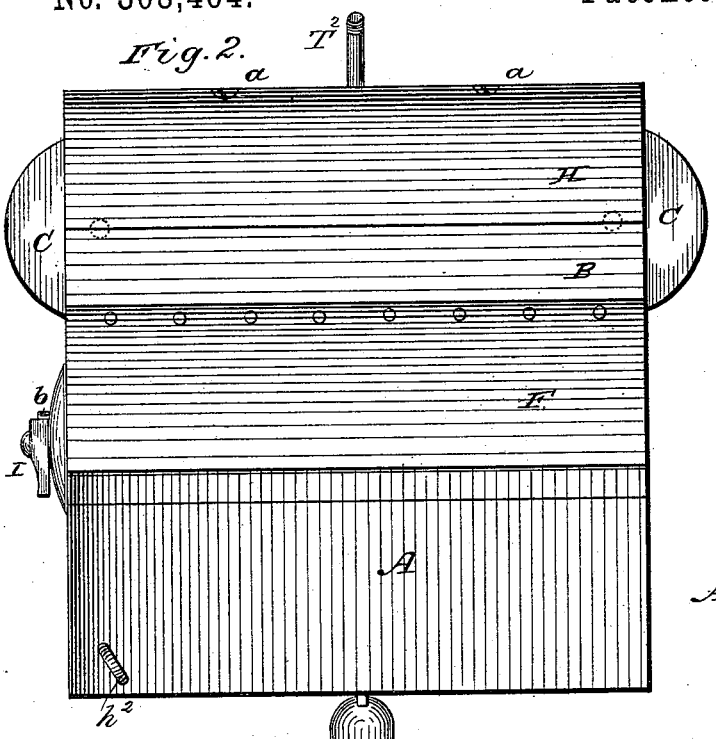


Fig. 3

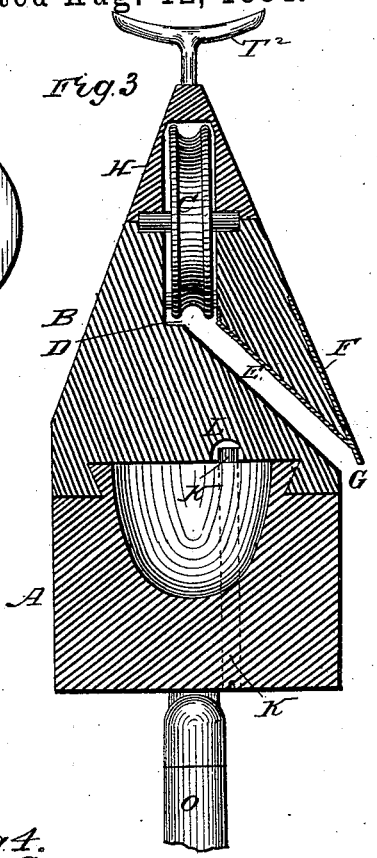
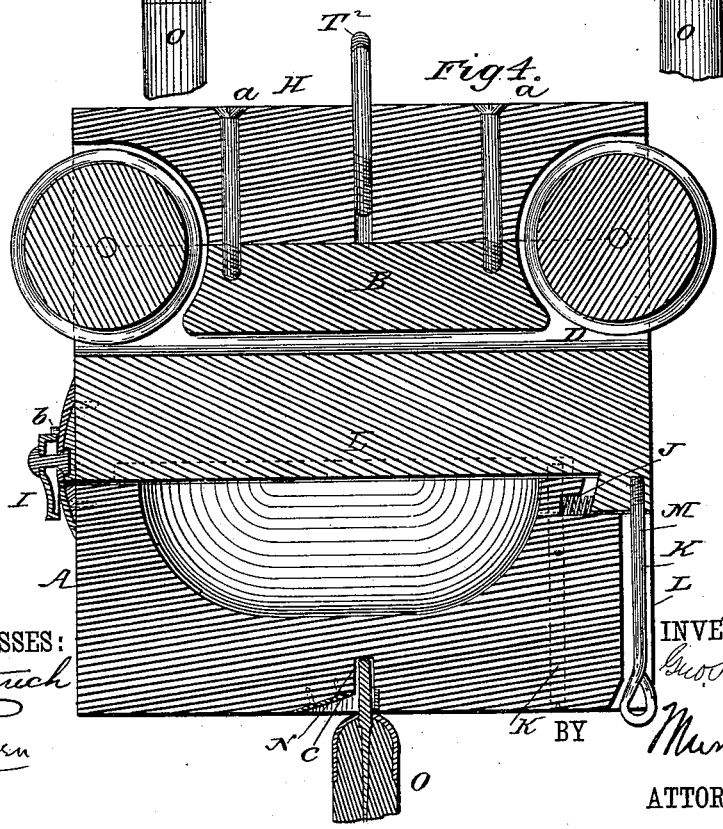


Fig. 4.



WITNESSES:

Fred. G. Dieterich

Edw. W. Byrn

INVENTOR:

Geo. H. Spring

BY Munn & Co

ATTORNEYS.

(No Model.) 3 Sheets—Sheet 3.

G. H. SPRING.

CASH CARRIER.

No. 303,464. Patented Aug. 12, 1884.

Fig. 6

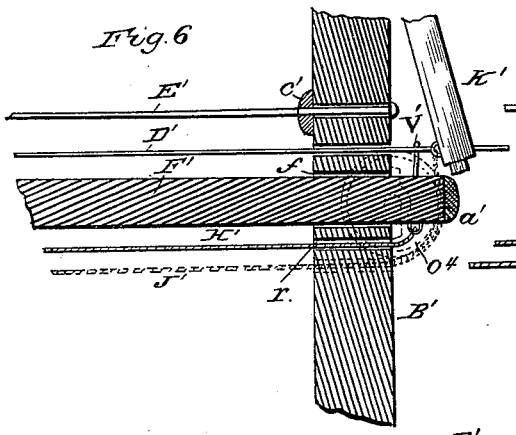


Fig. 8.

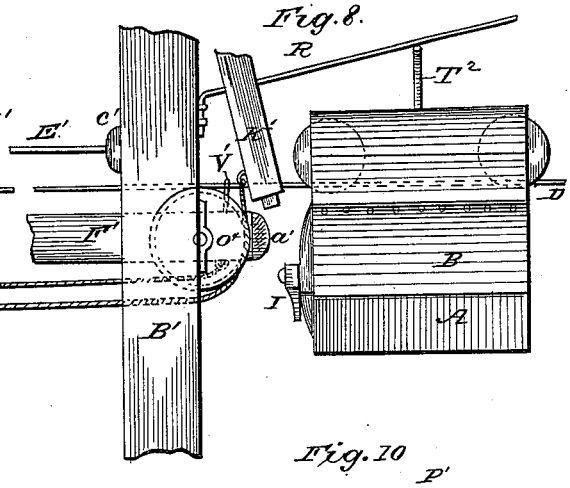


Fig. 10

Fig. 7.

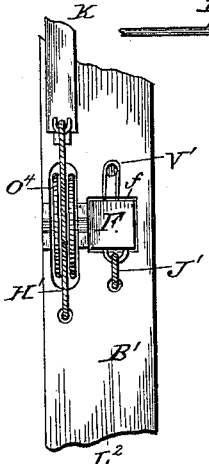


Fig. 11.

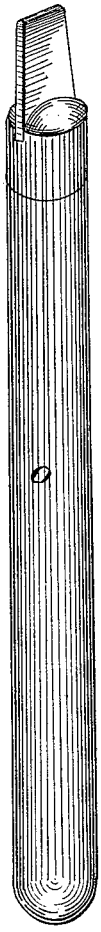


Fig. 5

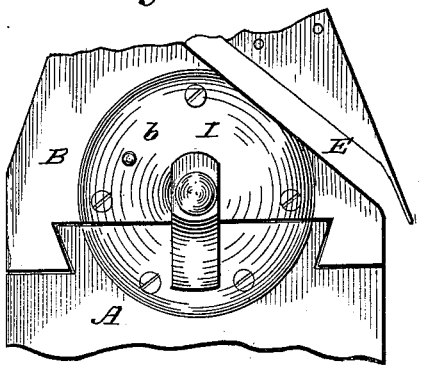
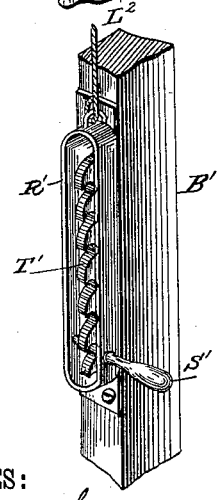


Fig. 9.



WITNESSES:

Fred. G. Dieterich

Edw. W. Byrn.

INVENTOR:

Geo. H. Spring

BY Munn & Co

ATTORNEYS.

UNITED STATES PATENT OFFICE.

GEORGE HOPKINS SPRING, OF LE MARS, IOWA.

CASH-CARRIER.

SPECIFICATION forming part of Letters Patent No. 303,464, dated August 12, 1884.

Application filed January 15, 1884. (No model.)

To all whom it may concern:

Be it known that I, GEORGE HOPKINS SPRING, a citizen of the United States, residing at Le Mars, in the county of Plymouth and State of Iowa, have invented certain new and useful Improvements in Cash-Carriers, of which the following is a description.

Figure 1 is a side view of one end of my devices, showing an additional wire, M′, and detainer, P′, for stopping the carriages at intermediate stations. Fig. 1ª is a plan view showing separate transmitting and receiving wires. Fig. 2 is an enlarged view in side elevation of the carriage. Fig. 3 is a vertical transverse section, and Fig. 4 is a vertical longitudinal section, of the same. Fig. 5 is a partial end view of the carriage. Fig. 6 is an enlarged vertical sectional view of the devices at the intersection of the suspension-wire D′ and the post B′. Fig. 7 is a view looking from right to left of the post B′. Fig. 8 is an enlarged side view of these devices as they appear in Fig. 1. Fig. 9 is a view in perspective of the lower portion of the post B′. Fig. 10 is a detail of one of the detainers. Fig. 11 is a detail of the lifting-rod.

My invention relates to that class of devices designed for use in large stores, in the place of cash-boys, for carrying the cash from the counters of the clerks to the cashier and returning the proper change, which devices are in the nature of little cars suspended upon and running on a tightened wire, provided with means for adjusting them to place and for containing and holding the money.

My invention is designed to simplify this system of cash-carriers, to expedite their action, and to render the same more certain, convenient, and efficacious; and to these ends it consists in the peculiar construction and arrangement of parts, which I will now proceed to describe.

My invention involves the use of a car upon a single horizontal wire, on which it may be sent and returned, or upon two horizontal wires, one for sending and the other for receiving, as may be preferred. I will, however, first describe the construction of the car itself, and afterward explain the arrangement of the track, with means for placing the car on the track, propelling it, and detaining it at any desired point, &c.

My car (see Figs. 2 to 5) is constructed in two movable sections matched together on the tongue-and-groove method, the lower section, A, being scooped out or recessed to form the cash-box proper. The upper section, B, is made to resemble the roof of a cottage, having wood (lignum-vitæ) pulley-wheels set in it—one at each end. These pulleys are made of wood to reduce noise. A hole, D, is formed lengthwise in the section B, just underneath the pulley-wheels, to allow the car to be moved upon the pulleys back or forward on a sustaining-wire, and to make the car detachable therefrom a slot, E, is made in the car from a lower part of one side, extending the whole length of it and up obliquely to the hole or groove made from end to end under the pulleys. By this means I am enabled to place the car upon the wire or to remove it very conveniently by hand; but to facilitate this matter I attach a sheet of brass, F, formed as shown, so that the doubled projecting part or eaves G projects beyond the side of the car and forms a guide to the wire in passing into the slot, or an assistance in putting the car onto the wire, and the portion which acts as a facing for the upper part of the slot serves to keep it smooth, which is also a benefit. The crown-piece H, secured by two screws, *a a*, serves to keep the pins on which the pulleys turn in position, and to complete the cottage appearance of the car.

To lock the lower section of the car to the upper section in closed position, I employ the brass button I, Fig. 5, on plate, with but one end or wing for fastening, so as to leave an open plain surface where the upper wing would come if left on, so that the propelling-shaft hereinafter described may have square and even action there as it strikes the car. A pin, *b*, is left projecting from the plate as a rest for the button when turned up. I use a spring, J, (see Fig. 4,) located between a bearing on the lower section and another in the upper section, as shown, to start the opening of the car or cash-box and keep the button always tight when it is closed. A screw-pin, K, Fig. 3, is arranged to project through

the lower section of car near the rear end, and up into a groove or slot, L, in the lower part of the upper section, extending lengthwise in same, as a means of limiting the sliding motion of the two sections, so that they cannot become disjointed, and a wire, M, with its looped foot attached to the rear of the upper section, serves as a central post or leg, keeping both sections of the carrier in even balance when the car is opened for receiving or sending money. This also serves, with hook h^2, as a point of suspension for bundles. The slot or opening N, Fig. 4, in the bottom of the carrier, with its depressed beveled mouth *c* faced with sheet-brass, is adapted to receive and to conveniently guide the metal or blade end of the lifting-rod O, both of which will be used to advantage in cases where for any cause (as in cases of obstructions below) it is found desirable or necessary to have the carrying wire or wires higher than within ordinary hand reach. This lifting-rod, inserted in slot N, is used to lift and place the car on such an elevated wire; and, again, another lifting-rod can be used to take it down after it has reached its destination. The rod can also be used to detain and detach the car at any given intermediate point not used as a fixed station, and in sending it back to the cashier.

I will now describe the arrangement of the supporting-wire.

Referring to Fig. 1, A′ is a rear post mortised into block O′ at the upper end, which is secured to the ceiling by screws passing through it into the the joists above, the other posts being secured in the same way.

B′ is a front post, and C′ (see Fig. 1ª) is a return or receiving post, located beside post B′, and six inches from it.

D′ is a No. 10 wire, extending horizontally from and through post A′ and B′, as shown, to another post at the farther end of the line—say one hundred feet—which would be receiving-post C′ at the other end.

E′ is a quarter-inch iron rod, located one inch above wire D′ and between posts A′ and B′, and is secured to them by nuts on either side, as shown.

F′ is a propelling-shaft, of wood, whose lower or body part is located just below wire D′, this part being about seven-eighths of an inch square. Its rear end or head, G′, extends above, as shown, and is suspended upon rod E′ and wire D′, which pass through it in holes adapted to them. The front end of shaft F′, after passing through post B′, as shown, where an easy opening, *f*, (see Fig. 6,) is made adapted to its form, has its front end to project a little beyond post B′, where it is suspended upon wire D′ by means of a suitable wire staple, V′, which is driven over wire D′ into it, so that the shaft F″ can slip easily upon it and upon the rod E′ forward or backward, as may be desired. The front end of the shaft has a half-inch rubber bumper, *a′*, projecting from it, and a similar bumper, b^2, is arranged at its rear end, and a rubber cushion, *c′*, is attached to post B′ where the head G′ strikes it.

H′ is a cord attached to the lower front end of shaft F′, and passing back through an opening, *r*, (see Fig. 6,) in post B′, extends through an opening, *b′*, Fig. 1, in post A′ below, and partly around a sash-pulley, O^2, thence up and over a pulley, O^3, above, as shown, having a weight, I′, attached to its lower end sufficient to draw back the shaft after it has been forced forward.

J′ is another cord, passing in like manner from the lower rear end of shaft F′ forward and through an opening in post B′ below, and partly around pulley O^4, nearly in line with which it is attached to a screw, which is fastened laterally to the back side and lower end of lever K′. This lever is fulcrumed to post B′ by a screw, *e′*, its short end being made broader to resemble the butt or stock of a gun, the better to balance it in use, and the long end being made a little heavier, so as to hang down.

To the rear end of lever K′ a cord, L′, is attached by boring from the upper side, and this cord has a ring attached to its lower end and within convenient reach of the operator.

Now, when but a single wire is used, each end is both a receiving and sending station. In operating with this arrangement the salesman would open the car, place the cash received in it, with a memorandum (say cash twenty dollars; amount of purchase, fifteen dollars) keeping a duplicate memorandum on the cashier. He would then place the car on the wire just before the propelling-shaft, then, reaching to the ring, would give a smart short pull, (slightly backward and downward,) which would throw up the outer end of lever K′, thus drawing forward rapidly the propelling-shaft F′ to the limit of its possible length beyond post B′, and in so doing would send the car or carrier in rapid speed and steady motion forward to its destination, where it would be detained by the bumper on the shaft F′, then removed by the cashier and returned, with the change—five dollars—by him inclosed, in like manner to the salesman. When two wires are employed, there are six posts in all—two at the sending end of each wire and one at the receiving end of each wire—as in Fig. 1ª, in which C′ are the receiving-posts. This arrangement has no fixed intermediate stations. Each post C′ has a general detainer-wire, R, as in Fig. 8, which is in the nature of an inclined large spring-wire adapted to receive any of the cars against its lower inclined side.

I also provide means for stopping the cars at intermediate points, and for this purpose I arrange a declining-wire, M′, Fig. 1, having a fall of three inches or more from the sending-station to the farther end of the line—say one hundred feet. This is suspended over the wire on which the cashier sends out his carriers, with detainers P′ attached to it and below it, as shown, at given intervals, thus forming intermediate stations where they are located. These detainers P′ are formed of pieces of sheet-

copper or other preferred metal of a wedge shape, soldered to the wire M′, making a strong attachment to it and projecting downwardly therefrom. Each detainer is six inches long and tapers from a point to three-eighths of an inch. These detainers are adapted to strike and bind against a projection on the top of the cars. With this arrangement I have a method of limiting the force of the propelling-power and regulating the same by limiting the stroke or sweep of the lever K′ as follows: There is a stop-bar, N′, fulcrumed by a screw to the farther side of post B′, as shown, and pivoted upon it. This bar is made of seven-eighths-inch hard-wood lumber, the long end being weighted with lead, which always gives the short end an upward tendency. The front rod of this bar has a pin, O^5, projecting from it laterally in front of post B′, and extending beyond the line of lever K′, so that this lever will always strike against the pin O^5 in its upward motion. A wire, L^2, is attached to the outer end of the pin O^5, and passes down, as shown, through an eye in the outer end of a pin, Q, that stands out on the face of post B′ sufficiently to keep the wire outside of the sweep of the lever K′. The wire L^2 is attached below to a looped clevis-shaped iron, R′, Fig. 9, having a handle, S′, as shown, with an iron pin running through it and through the lower part of R′, which is adapted to fit into the different openings of a ratchet, T′, made of quarter-inch iron, and screwed to post B′, as shown. It is plain that as this pin is lowered in the ratchet the stroke of the lever K′ is shortened and the propelling-power of shaft F′ is diminished.

The cashier can have the stations and their cars numbered 1, 2, 3, 4, 5, &c., and after testing the length of stroke required can number the openings in the ratchet to correspond with them, and when he sees car 3 (for instance) coming can place the handle-pin in ratchet-opening 3, and his stroke when he sends back the car will be adapted to carry it to station 3, and this illustrates how every other number or station may be regulated. To insure the positive stopping of the car at the right place, the cars are all provided with T-screws T^2 on top, that strike the detainers, which are arranged at different heights above the cars, and the height of the T-screws on the several cars are adjusted to stop at such stations by striking said detainers. The T-screws used on top of the car are made of different lengths, and may be raised or lowered by turning it so as to allow it to go beneath the declining wire to its own detainer or stopping station. The top of the T-screw is made slightly concave, so as to guide the wire to a central bearing upon it, the more effectually to cause pressure of the car-wheels upon the wire track below as the car passes under its detainer, which serve, practically, as a brake to its further progress. It is obvious that each car (after No. 1) will pass all previous stations and stop at its own. When a car is stopped thus at an intermediate station, it can be returned to the cashier upon the wire readily by hand.

At each receiving-post C′, I have a wire, R′, passing from the back of the post through it with an upward inclination, so that it serves as a brake or general detainer to all the incoming carriers, the slant or bevel of the wire being such as to strike the T-screw on each car whether very low or high.

I may wish, as a possibly preferred method of detention for my cash-cars, to attach my detainers to the lower side of the track-wire instead of the wire above, as mentioned. My plan in that case will be substantially as follows: At the first station the rear end of the detainer, under the track-wire, would be three-eighths of an inch deep, the rear end of the second detainer four-eighths of an inch deep, and so on, each successive detainer would be one-eighth of an inch deeper at its rear end than the preceding one. The car for the first station would have the upper bevel-surface below the pulleys trimmed down to present a level bearing, so that it would strike its detainer squarely, but not pass it. The car for the second station would be trimmed or slotted lower than the first, so that it would pass the first detainer and be stopped at the second, and so on, the downward slot of each car would be deepened to suit the farther stations successively.

Other systems of store-service of which I have had definite information involve the use of inclined planes or wires running in reverse angles, requiring the use of springs and other appliances to raise and lower the carriers to avail themselves of their benefit, while this allows the carrier to be placed upon a horizontal wire and to be taken from it conveniently by hand, and a ready motion of the hand (through the combination) gives the needed impulse to carry the car to its desired destination. The other systems (at least some of them) require the cashier to occupy an elevated station well toward the ceiling, which, in warm weather or in heated rooms, must be very inconvenient and debilitating, while this requires nothing of the kind. Again, the systems spoken of do not admit, except in very high rooms, of sending their carriers from end to end of very long stores, unless they come down so as to be inconvenient and obstructive part of the way, while this is generally used conveniently above the heads of the clerks behind the counters, where the space could not be employed to advantage for any other purpose. The ability of this system to carry so far also allows the cashier the full advantage of rear lights in a store, and allows the bookkeeper in his office to act as cashier, thus saving in many cases the hire of an extra clerk for that purpose. A special advantage of this invention is the rapidity of its action. It practically annihilates time and space, the carrier speeding in steady, almost silent motion, at the rate of one hundred feet in five seconds,

as repeated experients have demonstrated, and it could be sent over one hundred and fifty feet in a few seconds more by lengthening the propelling-shaft and the stroke of the pulling-lever; hence, as "time is money" both to the salesman and purchaser, this feature will make it valuable. It is simple and reliable in its construction and use. The car is not liable to derailment, though it has no special contrivances to insure this result, as some other systems have.

The motor employed in this invention involves no expense, and the entire outlay in the construction of this carrier is so moderate, compared with others, that it promises to become "the popular carrier," as it can be afforded at a price that will bring it within the reach of all, while it is a known fact that cash-carriers thus far, owing to their high price or the high rent required for their use, have been practically restricted to the use of the heavy business houses only.

Having thus described my invention, what I claim as new is—

1. The cash-car made with roof-faces converging to the top, and having two supporting-pulleys incorporated therein, with a slot extending in lateral direction inwardly and upwardly to the bottoms of the pulleys throughout the full length of the car, said car having a receptacle for cash, as set forth.

2. The cash-car made in two adjustable sections, having a matched sliding connection, the lower section being recessed on its upper side to form a receptacle, and the upper section being provided with means for suspending it upon a track-wire, substantially as described.

3. The cash-car made of three pieces of wood, the lower drawer-section, an upper section having a lateral inclined slot and pulleys above it, and a top or crown section adapted to close in the pulleys and form a bearing for the journals of the same, substantially as shown and described.

4. The cash-car having suspending-pulleys and a lateral upwardly-inclined slot to the bottom edges of the pulleys, the portion of material above the slot being extended as eaves beyond the side of the car, to facilitate placing the same on the wire, as and for the purpose described.

5. The cash-car composed of two rectilinearly-sliding sections, in combination with a fastening device for holding them closed, and a spring interposed between opposite bearings of the two sections, to start the opening or separation of the two sections, as shown and described.

6. A cash-car made of two rectilinearly-sliding sections, with means for holding the same closed, as set forth.

7. A cash-car made of two sliding sections, one of which has a downwardly-projecting looped arm and the other a registering-slot to receive said arm, for the purpose of balancing the car, and also forming an attachment for carrying bundles, in connection with a screw-eye fastened in the opposite end of the car, as shown and described.

8. A cash-car composed of two sliding sections and stops for limiting the movement of the sections over each other, as described.

9. A cash-car having an elongated rectangular slot in its bottom, with a tapering mouth faced with metal, to co-operate with a lifting-rod, as described, and facilitate its entrance into said slot, as set forth.

10. A cash-car having tapered roof-faces and supporting-pulleys, with a slot entering the car laterally and extending upwardly to the pulleys, the pendent angular portion of the car above the slot being faced with metal, as and for the purpose described.

11. The combination, with a track-wire and a cash-carrier running thereon, of a set of wedge-shaped projecting detainers located upon a single wire and graduated in degree of projection to stop the carrier at intermediate points, as set forth.

12. The combination of the track-wire, the inclined wire above it, having wedge-shaped detainers, and the cash-car having adjustable screw-bearings for contact with said detainers, as set forth.

13. The receiving-posts C′, having general terminal detaining-wires projecting upwardly and outwardly from the posts toward the incoming cars, in combination with the cars having a projection adapted to strike the terminal detainers, as and for the purpose described.

14. The combination, with a horizontal wire and a car suspended thereon, of the posts A′ B′, rod E′, sliding bar F′, a weighted cord for holding the same back, and a lever with cords and pulley for projecting said sliding bar against the car to give it momentum on the track-wire, as described.

15. The combination, with the horizontal track-wire, the suspended car, and means for projecting the car, as described, of an adjustable stop mechanism for regulating the stroke of the projecting mechanism and the extent of throw of the car, as set forth.

GEORGE HOPKINS SPRING.

Witnesses:
BYRON MUDGE,
JOHN MAYHER.