

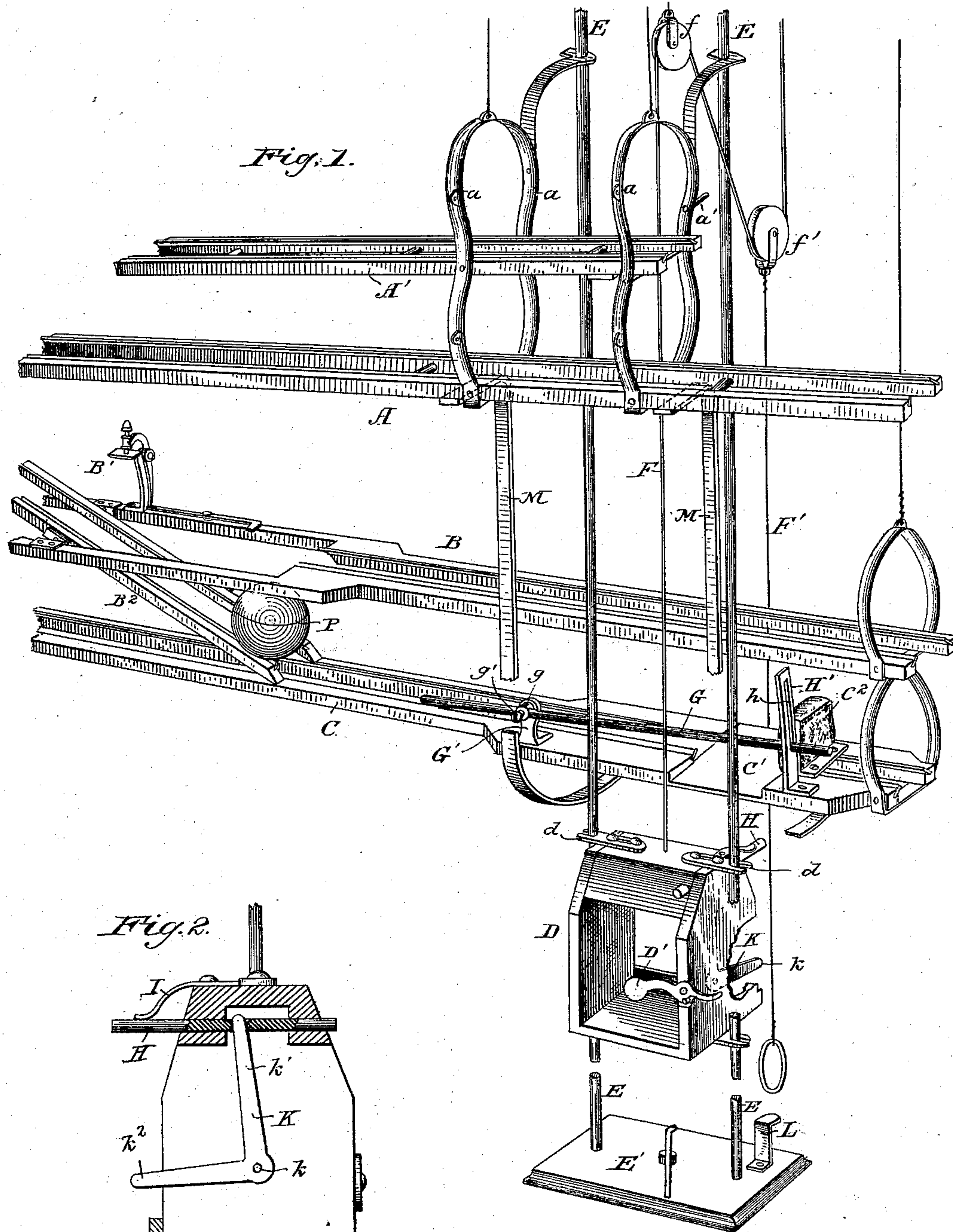
(No Model.)

2 Sheets—Sheet 1.

Z. S. HOLBROOK.  
AUTOMATIC CASH CARRIER.

No. 282,321.

Patented July 31, 1883.



Witnesses.  
Jno. H. Stockitt.  
C. C. Poole

Inventor.  
Leopold S. Holbrook  
per W. L. Austin  
Attorney

(No Model.)

2 Sheets—Sheet 2.

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Fig. 3.

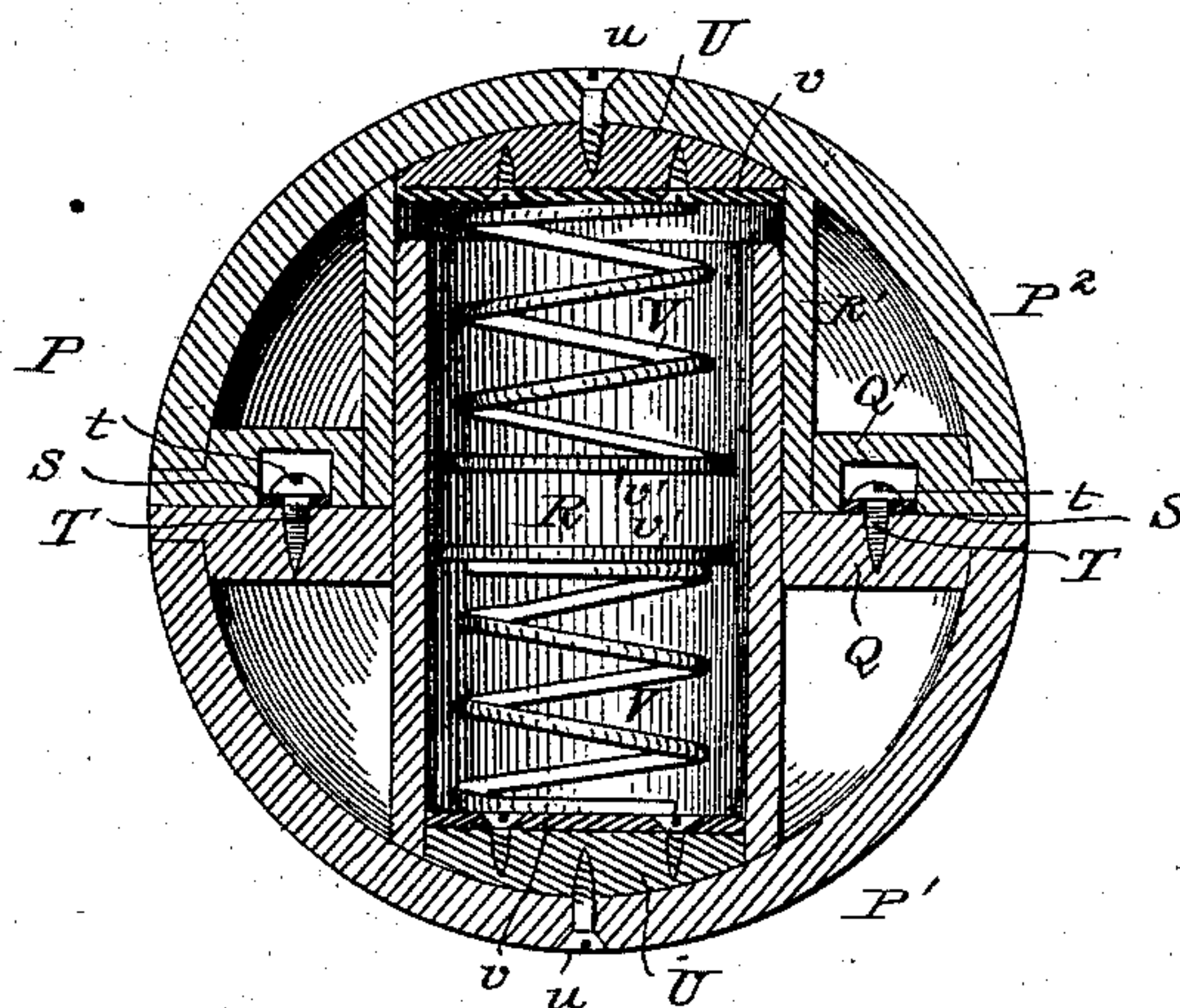


Fig. 4.

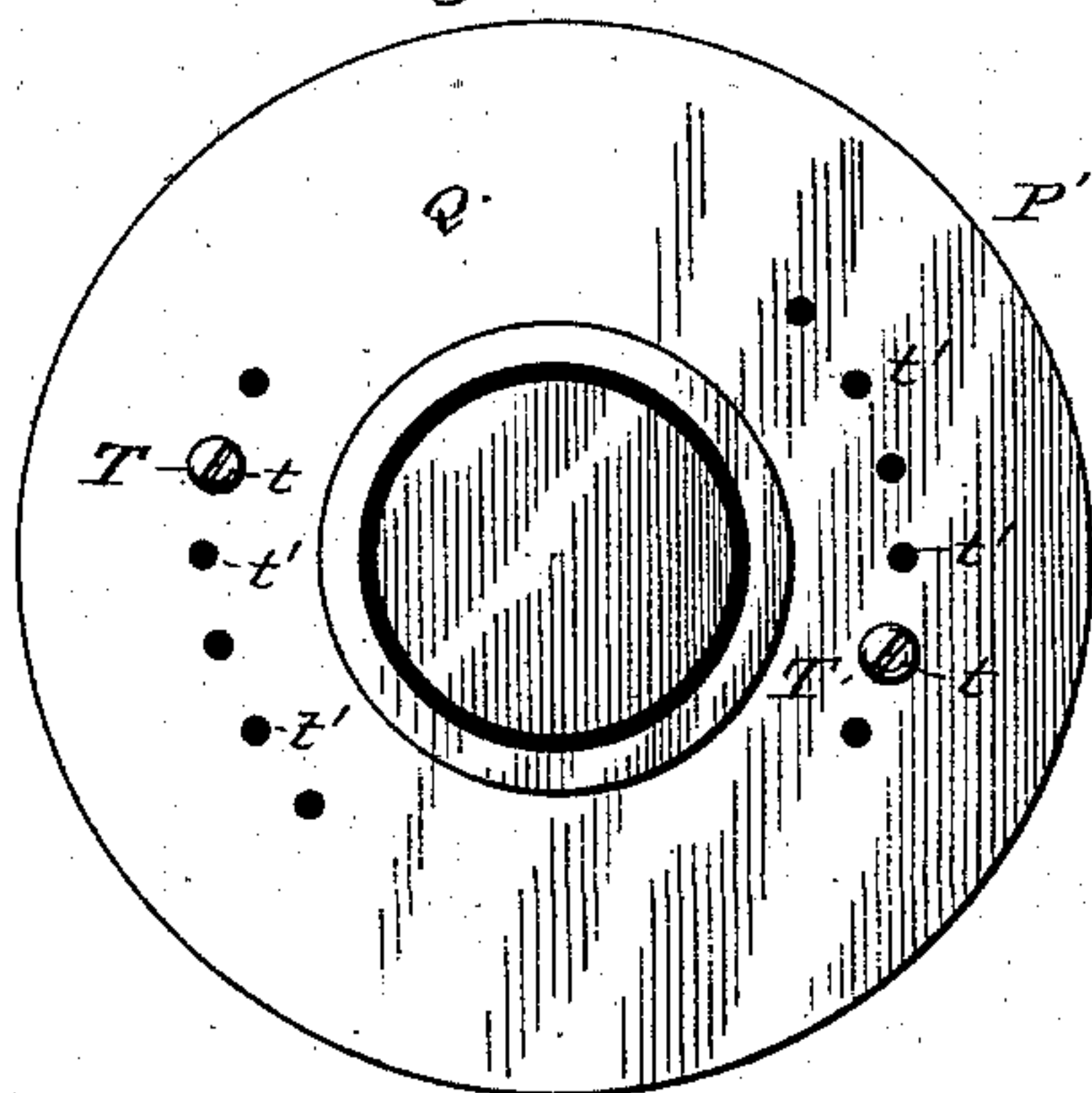


Fig. 5.

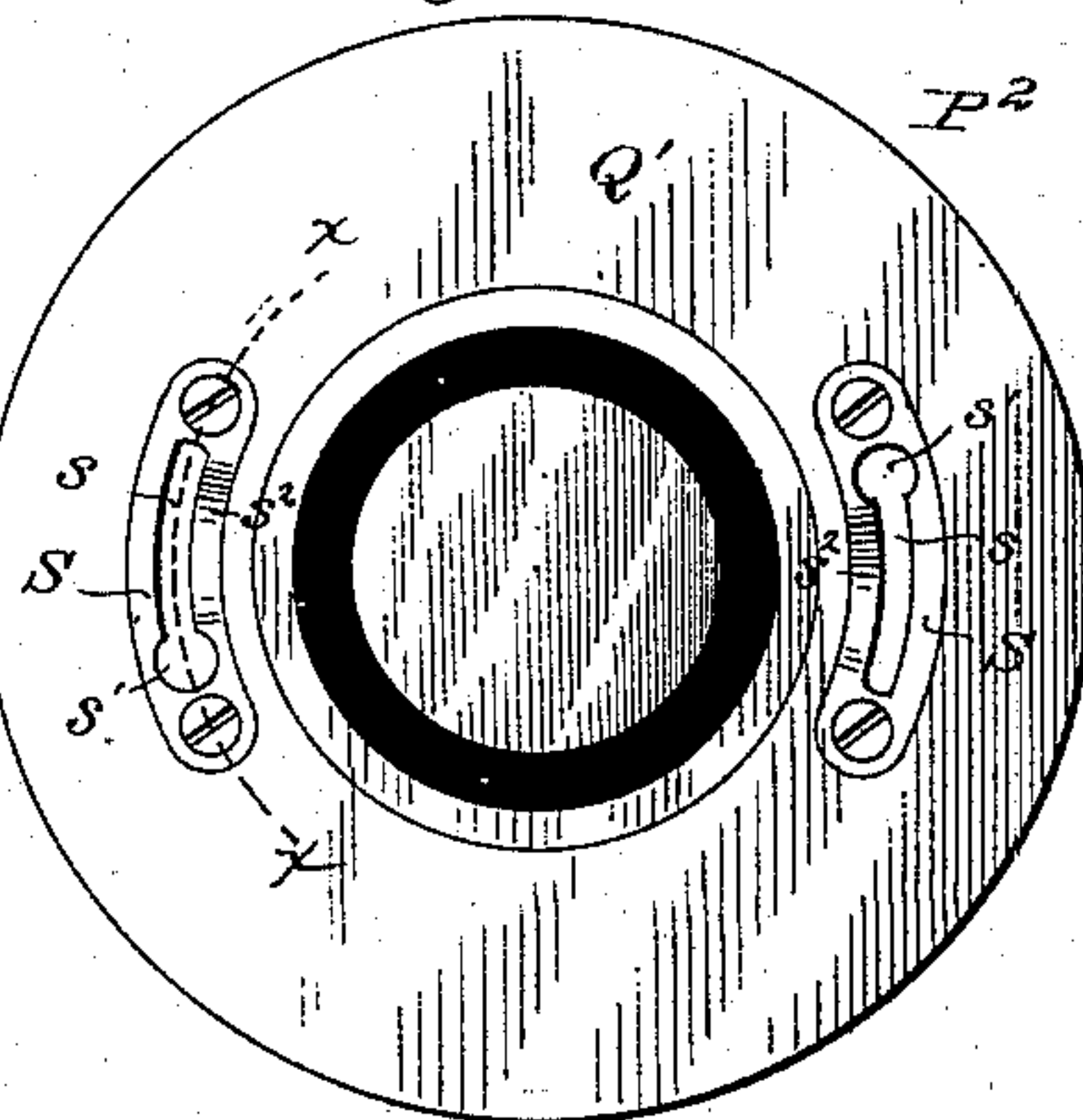
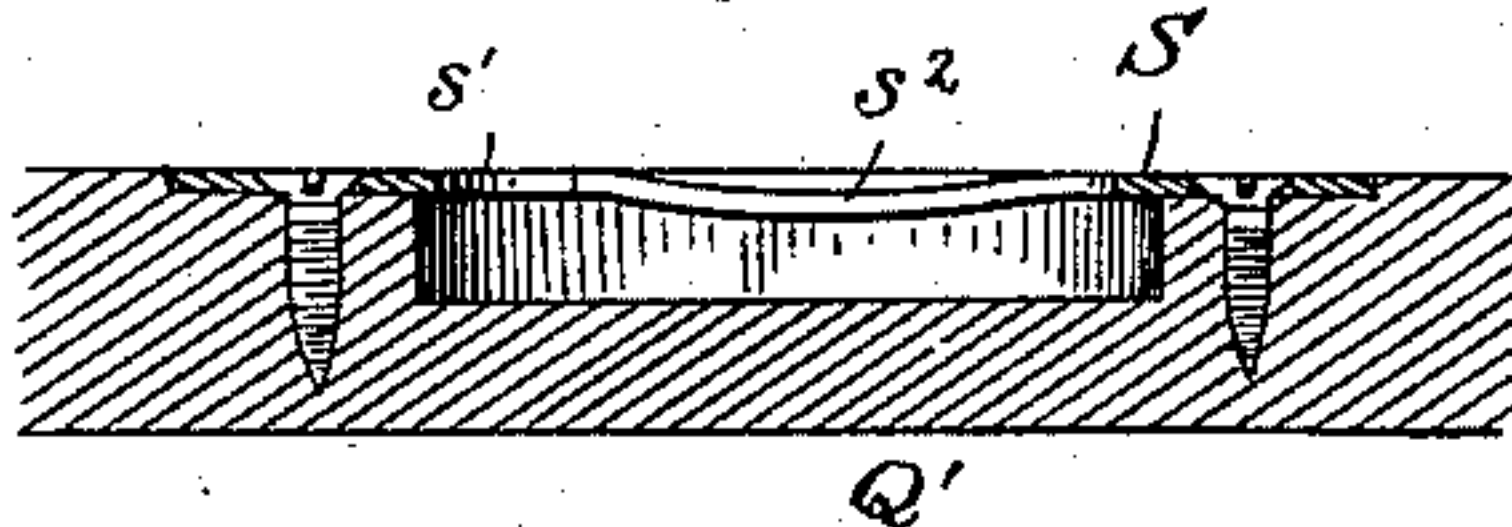


Fig. 6.



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# UNITED STATES PATENT OFFICE.

ZEPHANIAH S. HOLBROOK, OF CHICAGO, ILLINOIS.

## AUTOMATIC CASH-CARRIER.

SPECIFICATION forming part of Letters Patent No. 282,321, dated July 31, 1883.

Application filed May 19, 1883. (No model.)

*To all whom it may concern:*

Be it known that I, ZEPHANIAH S. HOLBROOK, of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Automatic Cash-Carriers; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to automatic cash-carriers for store service, having oppositely-inclined ways, spherical rolling carriers of varying sizes, and graduated stops on the return-way for discharging the carriers at their appropriate stations.

It relates more particularly to improvements in the devices for raising the carriers to the ways and lowering them therefrom at stations on the ways or at the cashier's desk, and also to improvements in the construction of the spherical carriers. Its object is to generally increase the efficiency and simplify the construction of cash-carrying systems; and it consists in the matters hereinafter set forth, and pointed out in the claims.

Heretofore at each salesman's station, and at the cashier's desk, when said desk is not elevated to a level with the ways, an elevator has been provided for raising the carriers and delivering them upon the way declining from such salesman's station or cashier's desk, and also a "drop-box" to receive the carriers discharged from the way declining toward such station or desk. The object of my invention, as it relates to these devices, is to provide a device which shall perform the functions both of the elevator and drop-box mentioned, so as to dispense with the drop-box, which is found to be objectionable on account of the injury to the carriers and unpleasant noise consequent upon the force with which they strike in falling therein.

To this end the invention consists in a vertically-moving carriage adapted to receive one of the spherical carriers, which slides upon guide-rods, in a manner similar to the elevators previously used, and which is arranged, in connection with suitable devices upon the ways, to deliver carriers upon the way declin-

ing from the station at which it is placed, and also to receive carriers from the way declining toward said stations, so that said carriers may be lowered therefrom.

For that object which relates to improvements in the spherical carriers my invention consists in an improved construction in the carriers, and an improved means of securing the two halves of a spherical carrier together, as will be hereinafter described.

Figure 1 is a perspective view of a portion of two oppositely-inclined tracks adjacent to a salesman's station, showing the devices for lowering and raising the carriers as proposed by my invention. Fig. 2 is a vertical cross-section of the vertically-movable carriage. Fig. 3 is a sectional view of one of the spherical rolling carriers constructed as proposed by my invention. Figs. 3 and 4 are views of the two hemispheres composing the carrier. Fig. 5 is a fragmentary section of part of the locking device, taken on line *xx* of Fig. 4.

In Figs. 1 and 2, A is a portion of the track inclined toward the cashier's desk, having above it a pivoted "bridge," A', adapted to receive the carriers and deliver them to the main track without interfering with the passage of other carriers on the said track, and which is constructed and operates in a well-known manner.

B is a portion of the return track or way from the cashier to the salesman's stations, and B' is one of the graduated stops used for discharging the carriers at their appropriate stations. The stop B' is arranged, in connection with devices previously used for this purpose, to release a vertically-moving switch, B<sup>2</sup>, for the purpose of discharging the carrier from the track. Below the track B a short subsidiary track, C, is shown, which is adapted to receive and hold carriers discharged from the main track preparatory to lowering them, and which has been described and claimed in an application for a patent previously made by me. The use of such subsidiary track is necessary to enable a carrier belonging at a certain station to stop at such station and remain there until lowered without interfering with the passage of other carriers beyond. In case the station at which it is desired to lower the carrier is at the end of the line or at the cashier's



desk the use of the subsidiary track mentioned is unnecessary, and in such case C would represent the lower end of the main track.

The tracks A and B are separated laterally, 5 so as to allow the passage between them of the vertically-movable carriage D. As shown in the drawings, the track A is placed considerably above the track B, as customarily arranged; but the position of the tracks in this 10 respect may be reversed, as will be herein-after described.

The carriage D slides upon vertical guide-rods E, which pass between the tracks A and B, and are attached at their upper ends to the 15 ceiling of the store, or other convenient place, and in their lower ends in a foot-board, E', placed in a position convenient to the salesman or cashier.

The means for raising and lowering the carriage D, as shown in the drawings, consists of 20 a cord, F, attached to the top thereof, which passes over a pulley, f, at the ceiling, around a pulley, f', and has its end secured to the ceiling. A cord, F', is attached to the pulley 25 f', which hangs within reach of the operator. These devices operate in a well-known manner to raise the carriage a considerable distance by a comparatively short movement of the cord F'.

30 The carriage D is made of sufficient size to hold one of the spherical carriers, and, as shown, is similar to the elevator-boxes previously used in carrying systems, being provided with slotted ears d to retain it upon the guide-rods E, a sloping bottom, and a pivoted detent, D', for retaining the carriers therein. 35 The sloping bottom of the carriage D declines toward the upper track, A, which has upon it a pivoted bridge, A', as before described. The said bridge is supported by two castings, a a, upon one of which is placed a pin, a', adapted to engage the detent-arm D' on the carriage D, so as to release the carrier and deliver it upon 40 the bridge A'. These devices for delivering carriers to the track A are those previously in use in carrying systems, and form no part of my invention.

In the subsidiary track C, near its lower end, 50 is placed a transverse incline, C', and across the lower end of said incline, and parallel with the side of the track, is a pivoted gate or detent, G, which in its normal position is adapted to retain upon said incline a carrier or carriers which may have been delivered upon the said 55 track. A cushion or buffer, C<sup>2</sup>, is placed at the side of the incline C', for the purpose of stopping carriers upon the track C when they reach said incline. The elevated side of the sloping bottom of the carriage D is arranged 60 to come opposite the lower end of the incline C' when the said carriage is raised to the track C, and upon said carriage is placed an adjustable stop or pin, H, which is adapted to strike and lift the gate G, so as to allow a carrier to 65 pass from the said incline at the moment that the sloping bottom of the carriage reaches the level of the lower end of the incline.

For the purpose of stopping the upward movement of the carriage D when the gate G has been raised by the stop H on said carriage 70 and a carrier transferred thereto, a standard, H', is placed at one side of the lower end of the incline C', which is provided with a vertical or curved slot, h, in which the end of said gate slides, and which is made of sufficient 75 length to allow only a sufficient upward movement of the said gate to permit the carrier to pass beneath it, and which supports the gate normally in a horizontal position.

As shown in the drawings, the gate G con- 80 sists of a cylindrical rod pivoted to a standard, G', upon the track structure by means of a hub, g, said hub being connected to said standard, so as to rotate thereon, and provided with a transverse aperture, g', through which the end 85 of said rod is passed, and in which it is secured by a set-screw, g<sup>2</sup>. The rod G is made of sufficient weight in its free end to force back the carriers following the one that has passed into the carriage D, so that when said carriage de- 90 scends and allows the said rod to fall the carriers on the incline will be effectually stopped. The weight of the said rod may be varied by adjusting it in the hub G' by means of the set-screw g<sup>2</sup>, the said rod being usually made long 95 enough for this purpose. Such adjustment of the rod G may be made by a sliding weight placed thereon and secured by a set-screw, or in any desired or preferred manner.

The carriers are delivered from the incline 100 C' to the carriage D over the summit of its inclined bottom, and are retained in said carriage by the detent D' while being lowered. A stop, e, may be placed upon the foot-board E', so as to lift the detent D' when the carriage reaches 105 the lower end of its movement and allow the carrier therein to roll into a basket or other receptacle.

In order to allow the carriage D to be raised 110 to the upper track, A, with a carrier, the stop H on said carriage is made movable, so that it can be placed in position either to engage the rod G, or not, as is desired.

In order to prevent the stop H being left 115 accidentally in a position to encounter the rod G when it is intended to raise the carriage to the upper track, I have provided a device for throwing the said stop back automatically when the carriage D reaches the lower limit of its movement, so that the said carriage will 120 always be in readiness to go to the upper track unless the stop is thrown out purposely. This device consists of a bent lever, K, which is pivoted at k to the inner surface of one of the side pieces of the carriage. The upwardly- 125 projecting arm k' of the said lever engages the stop H by having its end inserted in an aperture in said stop, and the end of the horizontal arm k<sup>2</sup> of said lever extends beyond the side of the carriage, and is constructed to strike 130 the top of a standard, L, placed upon the foot-board E' when the carriage is lowered to said foot-board. When the stop H is thrown out so as to strike the gate G, the end k<sup>2</sup> of the



lever will be depressed, and when the carriage is near the lower limit of its movement said lever will encounter the standard L and be thrown upward, thereby moving the stop H back, so that the carriage, when raised, may pass the gate G and go to the upper track.

A leaf-spring, I, may be attached to the top of the carriage, as shown, and arranged so as to press upon the stop H, in order to retain said stop in any position in which it may be placed, and to prevent any accidental movement thereof.

In order to retain the tracks A and B in the proper relative positions, and the lower track in proper relative position in relation to the rods E, so as to insure the perfect working of the devices described, connecting bars or braces M are provided, which are secured at their upper and lower ends to the tracks. Such braces are especially desirable, from the fact that it is inconvenient to connect the rods E to the lower track on account of the passage of the carriage D over said rods, and any lateral motion of the said rods in reference to said track would render uncertain the action of the stop H upon the gate G. Both tracks, as ordinarily constructed, are suspended by wires, and are therefore very liable to sway or swing from slight causes. The braces M are preferably arranged one on each side of the rods E, and have their ends bent at right angles to their central portions and secured to the under sides of the tracks.

P is one of the spherical carriers before mentioned, which is shown in detail in Figs. 3, 4, 5, and 6. Such carrier is, in general construction, similar to the carriers previously used, and consists of two equal halves or hemispheres, P' P<sup>2</sup>, one of which is provided with a centrally-projecting cylindrical rim, which fits into a corresponding recess in the other hemisphere, and which forms a continuation of the cylindrical walls of the aperture in which the article to be carried is placed.

For the purpose of securing lightness, strength, and durability in the carriers, I construct them wholly or partially of pasteboard, paper-pulp, or analogous material, which is pressed or molded into the proper form. In the drawings each hemisphere is shown as having a homogeneous outer shell, which may be composed of layers of pasteboard secured together by paste or glue and pressed into the proper form, or of paper-pulp molded into shape.

Instead of making the outer shell alone of the materials mentioned, each hemisphere may consist of paper-pulp molded in a single piece, and the necessity of securing several pieces together in forming the hemisphere thereby avoided.

As shown in the drawings, the outer shells, P, are connected to flat disks Q Q, which form the adjacent faces of the hemispheres when said hemispheres are joined to form a spherical carrier. Centrally in the disk Q of the hemisphere P' is secured a cylinder, R, which

forms the receptacle in which the cash is placed, and the end of which projects beyond the face of the said disk, and is adapted to fit in the interior of a cylinder, R', placed in the hemisphere P<sup>2</sup>, when said hemispheres are placed together. I preferably construct the cylinders R and R' also of paper or pasteboard, and secure them to the disks Q Q and the shells P by gluing, or in any other desired manner.

The hemispheres, made as described, may be coated with paint or a water-proof coating to prevent the absorption of moisture.

By the construction set forth a carrier is formed which may be easily and cheaply constructed, which will not easily become broken or injured, and which will be unaffected by heat or moisture.

In order to provide a device for locking the two hemispheres of the carrier, constructed as described, together, which shall be simple in construction and easily operated and adjusted, I place in the ring Q', forming the flat face of the hemisphere P<sup>2</sup>, curved metal plates S, of which two are preferably used, and which are placed at diametrically-opposite points in the said ring, flush with the surface thereof. The said plates are provided with curved slots s, concentric with the disks Q, said slots having enlarged apertures s' at one end, which are adapted to receive the heads t of studs T, placed in the face of the hemisphere P'. The slots s are arranged so that the shanks of the studs T will move through them when the hemispheres are placed together and rotated one on the other. The heads of the said studs being previously inserted in the aperture s, they are by this operation brought beneath the plates, and the hemispheres thereby held securely together. The material beneath the plates S is cut away, as shown in Fig. 6, so as to allow the heads of the studs to pass freely under them in the act of locking the hemispheres together.

The plates S are preferably made of thin sheet metal, and one or both of the side strips, s<sup>2</sup>, between the ends of the slot s', is bent down or depressed into the cavity beneath the plate, so as to form a spring which will yield when the head of the stud passes beneath it in the operation of locking the hemispheres together, but will offer sufficient resistance to the return of the stud to prevent the hemispheres being turned back, so as to become unlocked accidentally.

The studs T are preferably provided with screw-shanks, so that they can be readily adjusted to hold the hemispheres as closely together as is desired. A number of apertures, t', may be provided in the face of the hemisphere P', as shown, into which the studs T can be placed in case the apertures in which said studs are inserted become enlarged by wear, and the studs thereby loosened.

It is found in practice that rolling spherical carriers of varying sizes move by gravity upon an inclined track at different rates of speed, the larger carriers moving faster than the



smaller ones, so that when several carriers are upon such inclined way at one time the larger carriers are liable to overtake the smaller ones and interfere with their movement and the action of the discharging devices at the stations. To overcome this difficulty I make the smaller carriers heavier, either by putting more material into them in construction, or by providing weights which are adjusted according to the size of the carriers, so as to cause them to move at approximately equal rates of speed. As illustrated in the drawings, the pieces U U represent such weights, which are secured to the casings of the hemispheres at the bottom of the cylinders R R' by means of screws u u. Such weights are preferably made of varying sizes, corresponding with the sizes of the carriers; but cases containing shot, or other means of graduating the weight of the carriers, may be used. In the carrier shown coiled springs V V are attached to plates v, which are secured upon the weights U, and such springs are provided with disks V', between which the cash or other article to be carried is placed, so that it shall be retained near the center of the carrier in a well-known manner.

I claim as my invention—

1. In a carrying system, the combination, with the ways, of a single vertically-movable carriage for receiving the carriers from and returning them to the ways, and means for transferring a carrier from one of the ways to the carriage and from the carriage to the other way at the will of the operator, substantially as described.

2. The combination, with the ways A and C, a vertically-movable carriage, D, and means for raising said carriage to the ways, of a detent-arm, D', and a stop, H, on said carriage, a stop, a, on the track A, and a pivoted gate, G, on the track C, substantially as and for the purpose set forth.

3. The combination, with a track, C, and a vertically-movable carriage arranged to rise at one side of said track, of a transverse incline, C', constructed to deliver the carrier to the carriage, substantially as described.

4. The combination, with a track, C, and vertically-movable carriage D, of the transverse incline C', gate G, and means upon the said carriage for operating said gate, substantially as described.

5. The combination, with a track, C, and vertically-movable carriage D, provided with the stop H, of the vertically-swinging gate G, and means for limiting the upward movement of the carriage, substantially as described.

6. The combination, with the carriage D and incline C', of a weighted gate, G, and means for varying the weight of said gate, substantially as described.

7. The combination, with the carriage and incline C', of a longitudinally-adjustable and pivoted rod, G, operating by its gravity to retain the carrier upon said incline, substantially as described.

8. The combination, with the carriage and incline C', of the pivoted rod G and slotted standard H', substantially as described.

9. The combination, with the tracks A and B, placed one above the other and laterally separated for the passage of the carriage, of the connecting-braces M, substantially as described.

10. In a carrying system having the tracks arranged as shown, the combination, with the carriage D and gate G, of a movable stop, H, applied to the carriage, substantially as and for the purpose specified.

11. In combination with the movable stop H, a stationary stop, L, and means applied to the carriage arranged to engage said stop L for shifting the stop H on the descent of the carriage, substantially as described.

12. The combination, with the vertically-movable carriage D, provided with the stop H, of the bent lever K and stop L, substantially as described.

13. The combination, with the carriage D and movable stop H thereon, of the spring I, substantially as described, and for the purpose set forth.

14. The combination, with the hemispheres of a spherical carrier, of one or more plates, S, and a stud or studs, T, placed in the opposing plane faces of the said hemispheres in position for mutual engagement, substantially as described.

15. The combination, with the hemispheres of a spherical rolling carrier, of a headed stud, T, and a spring-plate, S, depressed into the path of the stud, substantially as described, and for the purposes set forth.

16. In a carrying system embracing inclined ways and spherical carriers, the combination, with the carriers, of weights for accelerating the speed of the carriers, substantially as described.

17. In a carrying system having inclined ways and spherical rolling carriers of unequal diameter, weights of unequal gravity applied to the carriers for the purpose of giving to the latter a substantially equal speed, as set forth.

In testimony that I claim the foregoing as my invention I affix my signature in presence of two witnesses.

ZEPHANIAH S. HOLBROOK.

Witnesses:

M. E. DAYTON,  
JESSE COX, Jr.