

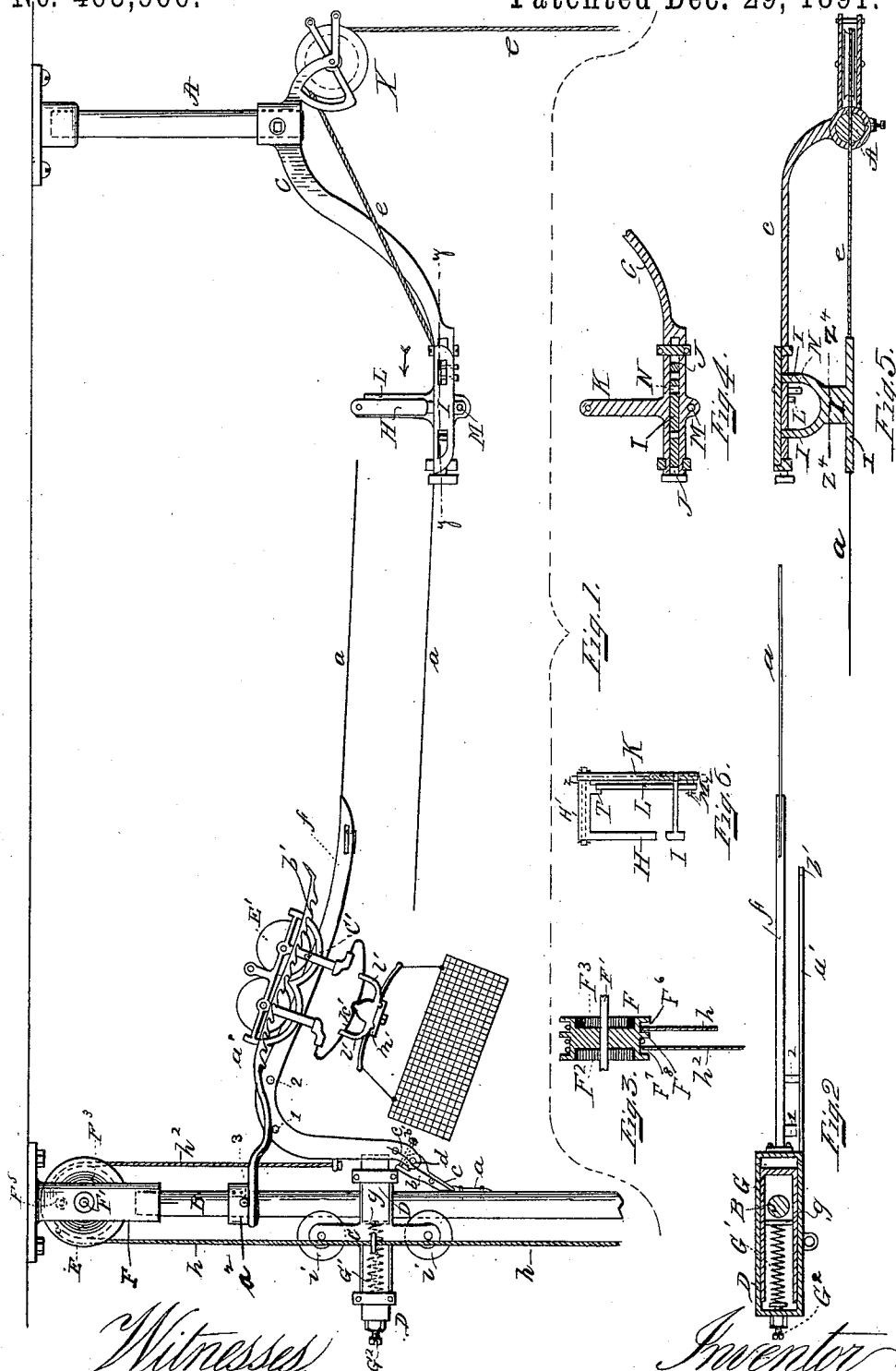
(No Model.)

3 Sheets—Sheet 1.

R. GORNALL.  
STORE SERVICE APPARATUS.

No. 465,966.

Patented Dec. 29, 1891.



Witnesses  
E. L. Heald  
L. M. Hoffman

Inventor  
Richard Gornall  
By Edwin C. Gilman  
J. S. Foster attys

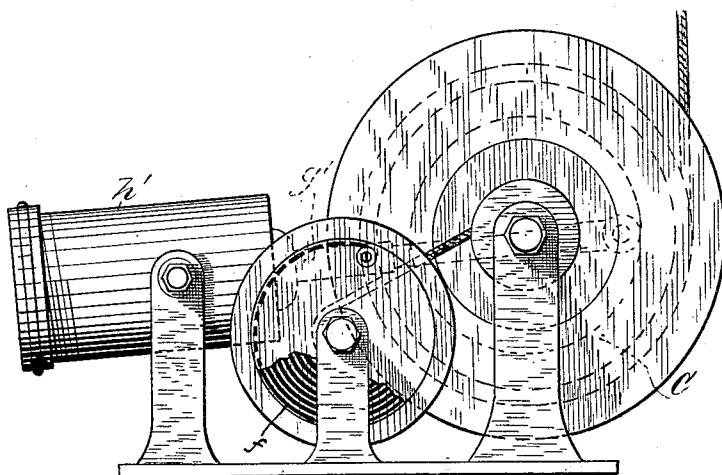
(No Model.)

3 Sheets—Sheet 2.

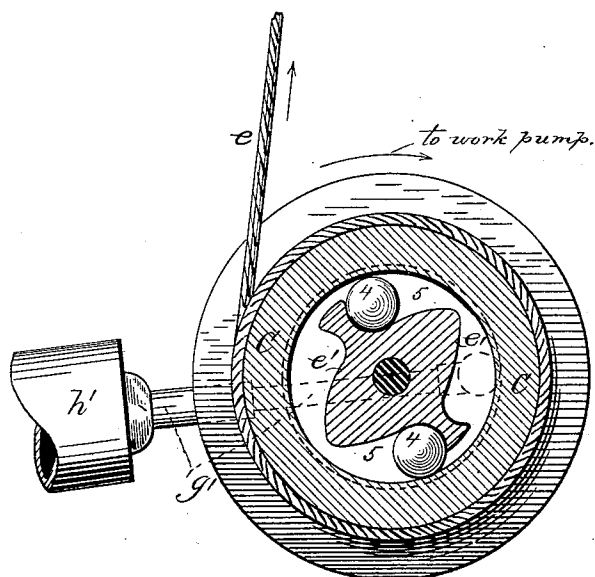
R. GORNALL.  
STORE SERVICE APPARATUS.

No. 465,966.

Patented Dec. 29, 1891.



*Fig. 7.*



*Fig. 8.*

*Witnesses*  
*E. L. Keaton.*  
*Geo. M. Hoffman.*

*Inventor*  
*Richard Gornall*  
*By Edwin C. Gilman*  
*J. S. Plunk atty*

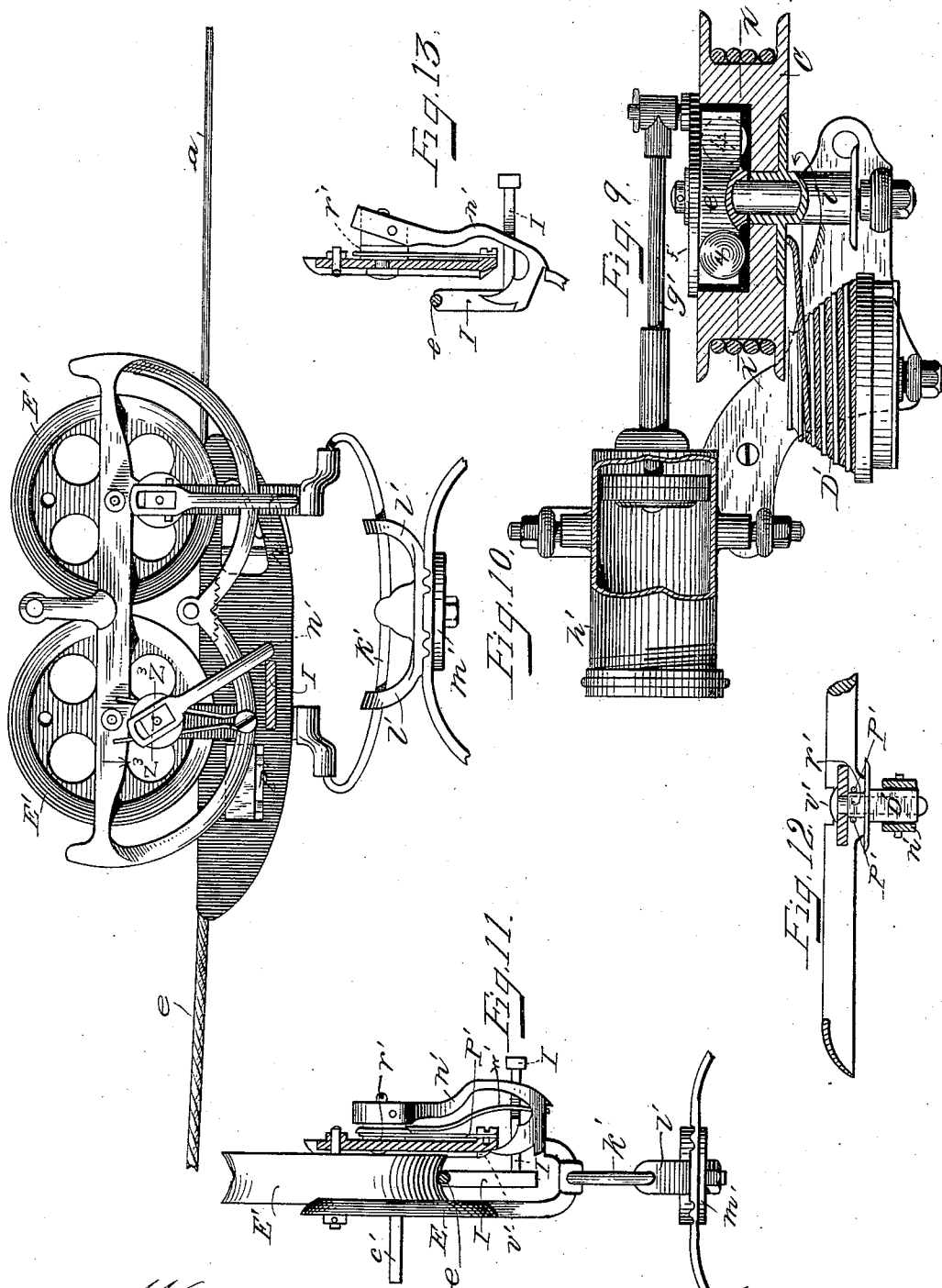
(No Model.)

3 Sheets—Sheet 3.

R. GORNALL.  
STORE SERVICE APPARATUS.

No. 465,966.

Patented Dec. 29, 1891.



Witnesses  
E. L. Kearton.  
L. M. Coffman.

Inventor.  
Richard Gornall  
By Edwin L. Gilman  
J. S. Buck attys

# UNITED STATES PATENT OFFICE.

RICHARD GORNALL, OF BALTIMORE, MARYLAND, ASSIGNOR TO THE LAMSON CONSOLIDATED STORE SERVICE COMPANY, OF BOSTON, MASSACHUSETTS.

## STORE-SERVICE APPARATUS.

SPECIFICATION forming part of Letters Patent No. 465,966, dated December 29, 1891.

Application filed March 7, 1891. Serial No. 384,119. (No model.)

*To all whom it may concern:*

Be it known that I, RICHARD GORNALL, of Baltimore, Maryland, have invented a new and useful Improvement in Store-Service Apparatus, of which the following, taken in connection with the accompanying drawings, is a specification.

One object of my invention is to provide a way between two points, with one end fixed and the other movable, so as to incline the way to allow the carrier thereon to travel by gravity.

My invention has several other objects, hereinafter mentioned.

My invention consists in certain means whereby the movable end of the way is held in an elevated position and whereby the same end is automatically released by the carrier to assume a lowered position, so that the carrier may return by gravity over the same line.

My invention further consists of certain features hereinafter described, and pointed out in the claims.

In the drawings which illustrate my invention, Figure 1 represents the two ends of the way, the location of the cashier's desk, for instance, being at the left and the location of the salesman's counter at the right, with the wire of the way between the terminals broken away. Fig. 2 is a plan view at the salesman's desk, showing in section the device for keeping the wireway taut. Fig. 3 is a central vertical section of the pulley used for raising and lowering the movable end of the way at the salesman's desk. Fig. 4 is a vertical section taken on the line  $z z$  of Fig. 6. Fig. 5 is a plan view, in section, taken on the line  $y y$  of Fig. 1. Fig. 6 is a detailed view of the devices by means of which the wireway may be moved longitudinally, the view being taken in the direction of the arrow, as shown in Fig. 1. Fig. 7 is an enlarged side elevation of the retarding mechanism for limiting the descent of the carrier upon the flexible extension of the way. Fig. 8 is a vertical section through the drum of the retarding device, showing the piston-rod in dotted lines and the piston-cylinder partly broken away. Fig. 9 is a plan view of the retarding device through the lines  $z^5$  of Fig. 7, with the cylinder partly broken away. Fig. 10 is a side

view of the carrier, with the sliding frame and section on the line  $z^4 z^4$  of Fig. 5. Fig. 11 is an end elevation of the carrier, showing the device for permitting the carrier to pass an obstruction on the way. Fig. 12 is a plan view on the line  $z^3 z^3$  of Fig. 10, showing the square bearing-plates of the pivoted portions of the carrier which are adapted to be swung aside when meeting obstructions on the way. Fig. 13 is an enlarged detail view of the device for permitting the pivoted portions of the carrier to be swung aside when meeting obstructions on the way, the said pivoted portions of the carrier being shown in the position taken when the said carrier comes in contact with the sliding frame.

The wireway  $a$  extends between the two stations and is composed of ordinary wire stretched taut. It is connected at the cashier's counter in any suitable manner to a sliding plate I, which forms a continuation of the track for a short distance. The plate I, which is cast in one piece, moves in a slot J in the straight portion of the bracket C, parallel to its edges and open at one end. The bracket C extends rearwardly in the direction of the way and is supported upon a hanger A by means of a sleeve surrounding the same and adjustably secured by means of set-screws. The way is continued for the car to run upon between the end of the plate I and the hanger by means of a rope  $e$  or other flexible connection, lowering upon receiving the weight of the carrier and operated in any suitable manner to raise the carrier and to restore it to the permanent way.

From the straight portion of the bracket C extends upwardly a flat piece K, at the upper end of which is pivoted the lever H by a horizontal arm H', and from the under side of the arm H' extends the projection T, adapted to bear against the lever L, pivoted on the projecting piece M of the bracket C.

A pin N projects from the plate I, which moves in a slot in the horizontal portion of bracket C as the plate I slides in the slot J in said bracket. The lever L presses against the pin N as the projection T throws forward the upper end of the said lever, the said projection receiving its movement from the lever H, with which the carrier comes in contact

with considerable impetus as it travels down the incline of the way *a*, so as to slide the plate I along slot J toward the post A and exert considerable pull on the wire way *a*, so as to detach the end from which the carrier E' has been received and lower said end in a manner hereinafter described. The carrier, after passing the lever H, runs upon the extension *e*, which lowers under the weight of the carrier. The rope *e* passes over pulley X and down to a device, hereinafter described, for regulating the descent of the carrier upon the rope *e*. At the opposite end of the way is a post B, suitably supported from the ceiling or from the counter or floor and serves to support the end of the way at the cashier's desk.

In order that the carrier may run by gravity to and from the cashier's desk, I support the vertically-movable end of the way at this station upon the standard or post B in such a way that it may change the inclination of the way to allow the carrier to run from and to the cashier. The wireway *a* is connected to the bracket *f*, which is curved upwardly, as shown, and is attached to the sliding frame D, which is supported upon the post B. The bracket *f* extends below the frame D and terminates in a fork, into which fits the finger *b*. The pivot *d* extends through the bracket *f* and finger *b*. Against an extension of pivot *d* bears a light spring *c*, attached to bracket *f* and finger *b*, and so set as to hold said finger lightly in contact with standard B. A set-screw *b'* prevents the upper end of finger *b* from swinging outward and prevents further inward movement of the finger *b* by the spring *c*, so that the end of the finger is held lightly in contact with the said standard, and a longitudinal pull upon the wireway *a* will release said finger from the projection on the standard B.

Upon the upper end of the projection *a*, which is beveled, fits the lower end of the finger *b*, oppositely beveled.

The rope *h''* is attached to the bracket *f* and passes upwardly, and is attached to one side of pulley E. To the other side of pulley E is attached the rope *h*, which extends within convenient reach of the operator. By means of the rope *h* the operator raises the bracket *f*, and with it the frame D, to its upper position, the catch *b* snapping over the projection *a*, by which the bracket is held in said upper position.

Pivoted at one side near the rear of bracket *f* is an arm *a'*, which extends along said bracket a little distance to one side and a little above the plane thereof. This arm is provided on its under surface with teeth or serrations *b'*, and the carrier is provided with a projecting pin *c'*, which extends out into line with or under arm *a'*, and is held and prevented from returning by catching in the teeth of said arm. Pins 1 and 2 extend from bracket *f* beneath the arm *a'* and tend to limit the movement of the arm in both directions. As the sliding frame D is elevated to incline the

way to the salesman's counter, the inner end of the arm *a'* comes in contact with the stud 3 on the sleeve *a''* on the standard B, which elevates the front end of said arm and releases the carrier from the teeth and allows it to run by gravity to the opposite end.

In order to keep the wire taut, I have provided the sliding frame D, mounted on friction-rollers *i*, within which frame is a shell G, (see Fig. 2,) having a partition *g*, against which the spring G' bears, the spring at the other end exerting its pressure against washer on set-screw G<sup>2</sup>. By compressing the spring G' by means of set-screw the sliding frame D moves toward the set-screw and draws with it bracket *f* and way *a*, which is thus kept taut.

The pulley E is mounted in frame F, and is divided into two parts by partition F<sup>8</sup>. The part F<sup>6</sup> receives the rope *h*. The other part *f'* receives the rope *h'*, attached to bracket *f*. The shaft F' passes through pulley E, and has bearings in the frame F. The springs F<sup>2</sup> and F<sup>3</sup> are placed in cavities on each side of pulley, one end of the springs being attached to the shaft F' and the other ends having eyes into which pass pins F<sup>5</sup> and F<sup>5</sup>, extending inward to the frame F. The springs F<sup>2</sup> and F<sup>3</sup> are of different tensions, the spring F<sup>2</sup> being three or four times stronger than spring F<sup>3</sup>. These springs are placed in the pulley in opposite ways. The light spring F<sup>3</sup> is wound tight, or nearly so, and the strong spring is put in loose, or nearly so. The ropes are then attached to the sides of the pulley with the carrier in its upper position. The spring F<sup>3</sup> is made easy of access, so as to loosen or tighten it as to almost balance the bracket *f* and wireway, so that they will fall slowly.

In order to guard against too rapid descent of the carrier when it reaches the flexible extension of the way, I provide a retarding mechanism. (Shown in Figs. 7, 8, and 9, and in detail in Figs. 8 and 9.) The extension *e* is carried over a pulley X and downward over a curved pulley C, to which it is secured. This pulley is recessed and contains a retarding mechanism, which consists of two balls 4, arranged in pockets 5, which gradually increase in diameter upon an eccentric *e'* to the inner periphery of the recess of the pulley. The pulley C is loose upon its supporting-shaft, and the eccentric *e'* is also loose upon its shaft. A face-plate *f'*, secured to this eccentric, covers the opening of the recess and is provided with a wrist-pin, to which is connected a piston-rod *g'*, which carries a piston working comparatively loose in the cylinder *h'*, mounted so as to oscillate in suitable bearings. When the carrier has reached the extension *e* and begins to descend by its own weight, the rope which is wound upon the drum C when the extension *e* is taut begins to unwind, so as to form a loop for the descent of the carrier, and as it unwinds it moves the drum in the direction of the

arrow shown in Fig. 9 and causes the balls to bind in the contracted channel between the eccentric and the inner periphery of the recess, and thus gives movement to this eccentric and through it to the piston-rod and piston, which thus causes it to work within the cylinder and in this manner to retard the descent of the carrier. After the carrier has been lowered and the parcel or change has been placed within the receptacle the operator lifts it above the level of the wire by drawing upon the rope *e*, the point of support of said rope, as shown in Fig. 1, on the pulley X being a little higher than the point of connection with the wire of the way, thus giving it an impetus to start it along the way. Ordinarily this action would cause the rope which formed the loop to allow the descent of the carrier to become slack where it had been unwound from the drum, and I find it desirable to provide means by which this slack may be taken up and also desirable to do so in a uniform manner. To this end I have arranged a fusee D' with a recess arranged in its larger part containing a spring *f*. I wind upon the fusee a suitable cord, and connect it to the outside of the pulley C or to the hub thereof, so that as the carrier descends upon the loop and the rope from the pulley C is unwound to allow for its descent the cord of the fusee is wound upon the hub *i'*, thus placing a tension upon the spring of said fusee. Thus when the operator elevates the carrier the slack of the operating-rope is taken up and is wound upon the pulley C by the action of the spring *f*, unwinding its rope from the hub *i'* and winding it upon the spiral. By means of the fusee I get a regular pressure, and the slack is taken up uniformly.

The carrier is shown at E', and is composed of a suitable frame provided with bearings for two wheels, running one behind the other. The carrier has a depending loop of a curved shape, as shown at K', upon which slides a plate *l'*, which constitutes the upper plate of a clamp for supporting the receptacle for the cash or parcel. A lower plate *m'* is connected by means of a screw to the plate *l'*, the said upper plate being provided with a number of projections, which form channels into which the bail of the receptacle may be held and securely clamped by pressure of the lower plate. In order to allow the carrier to pass by the plate, I arrange the frame of the carrier upon one side with the pivoted portions *n'*, which under the action of the plate I are adapted to be thrown aside, which thus allows the carrier to pass these obstructions. These arms *n'* are pivoted on square bearing-plates *o'*, which in turn are pivoted upon a pin projecting from the frame of the carrier and under spring-tension by means of embracing-arms of the spring P', which extends upward from the point of support and embracing the square shoulder *r'*, as shown in Fig. 12. Thus an inward movement may be given to the lower carrier of the arms *n'* by

means of the pivotal connection on the square blocks and a lateral movement may be imparted against the tension of the spring-arms by means of the square blocks. These arms *n'* extend upwardly and terminate in hooked portions, which hooked portions extend upwardly and are held in recesses in the upper part of the frame, as shown at *v'*, and against all pressure from the inside they are locked in place and any irregular movement of the carrier upon the way will not tend to throw the carrier off the track at this point, as these arms will resist any such pressure. A spring *w'* extends from the lower hooked portion upwardly and places the arm under tension against inward movement. It will be seen that these pivoted portions are held with their hooked ends engaging with the recesses under spring-tension and are held by the walls of the recesses against lateral movement, and in order to free them from the recess and allow the carrier to pass the obstruction it is necessary to first give them an inward movement to carry the point out of the recess *v'* by coming in contact with the movable portion of the plate I, and then to give them a lateral movement to overcome the pressure of the spring P'. It will be seen that while this construction enables the clutch to pass the obstruction of the way these pivoted portions are held firmly against movement which would tend to displace them by the irregularity of the movement or oscillations of the carrier, and there is no liability of the carrier being thrown off the way because of the arrangement of these pivoted segments.

It will be understood that while I have shown the way as provided with a flexible extension I do not limit myself to a store service containing this feature, as my invention is not dependent upon such an extension.

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

1. The combination of a way, a carrier thereon, a vertically-movable support, to which one end of the way is connected, devices for holding said support in its elevated position, a movable support to which the other end of the way is connected, devices connected to the latter support and extending into the path of the carrier, whereby the momentum of the incoming carrier is imparted to said device, the way moved bodily, the vertically-movable support released from its holding devices, and the inclination of the way changed for the return of the carrier, substantially as described.

2. The combination of a way, a carrier thereon, a vertically-movable support to which one end of the way is connected, devices for holding said support in its elevated position, a slide to which the other end of the way is connected, an upright lever adapted to actuate said slide, a right-angled lever extending into the path of the carrier so as to receive its momentum and adapted to actuate said upright

lever so as to impart the impetus of the carrier to the slide, so as to move the way bodily in the direction of the travel of the carrier and to cause the inclination of the way to be changed for the return of the carrier, for the purpose set forth.

3. In a store-service apparatus, the combination of the way with mechanism for keeping the way taut, which mechanism consists of an exterior shell connected to the way and an interior sliding shell having a partition, a spring bearing upon the said partition and one end of the exterior shell and exerting its pressure in opposite directions, and means for regulating the tension of the spring, substantially as set forth.

4. In combination, in a store-service apparatus, a way extending between two points, a carrier adapted to travel on said way, a vertically-movable support to which one end of the way is connected, a longitudinally-sliding piece to which the other end of the way is connected, an upright lever connected to said sliding piece, a right-angled lever extending into the path of the carrier and receiving the momentum of the carrier and adapted to actuate said upright lever so as to move the slide in the direction of the travel of the carrier, whereby the draw upon the wireway causes the automatic release of the movable support and changes the inclination of the way for the return of the carrier, substantially as described.

5. In a store-service apparatus having one end of the way connected to a frame slidable vertically, a pulley having cavities on opposite sides for the reception of springs of different tensions, a connection extending from

the movable end of the way to the side of the pulley having the spring of greater tension, and a rope connected to the side having the spring of less tension extending to the operator, for the purpose set forth.

6. In a store-service apparatus, a carrier consisting of a suitable frame and wheels mounted in said frame, and pivoted arms upon one side mounted on pivoted blocks, both arms and blocks being under spring-tension, said frame having recesses for holding the arm from lateral movement, combined with the cam-plate at the point of junction for freeing the arms and allowing them to be moved laterally to pass the obstruction, substantially as described.

7. In a store-service apparatus, the combination of a track having a longitudinally-movable support at one end and a vertically-movable support at the other end, a retaining device at its vertically-movable end to hold the track in its elevated position, and mechanism at the other end of the track adapted to be operated by the carrier for drawing the track in the direction of the travel of said carrier, whereby the vertically-movable support is released from its retaining device and the inclination of the way changed for the return of the carrier, substantially as described.

In testimony whereof I, RICHARD GORNALL, have signed my name to this specification, in the presence of two subscribing witnesses, on this 3d day of March, A. D. 1891.

RICHARD GORNALL.

Witnesses:

DANL. FISHER,  
JNO. T. MADDOX.