

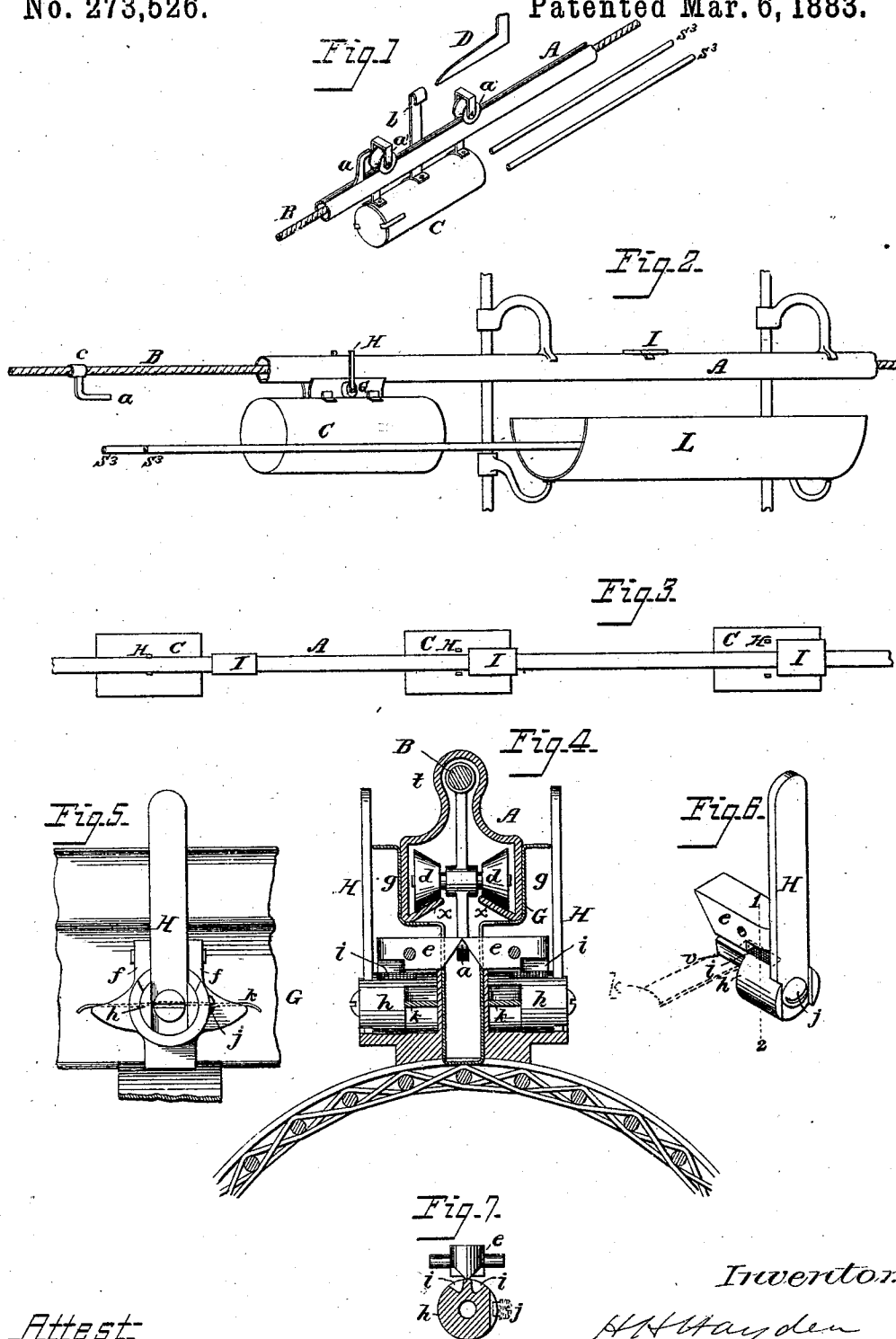
(No Model.)

3 Sheets—Sheet 1.

H. H. HAYDEN.  
STORE SERVICE APPARATUS.

No. 273,526.

Patented Mar. 6, 1883.



Attest  
Courtney A. Cooper.  
Notary Public.

Inventor:  
H. H. Hayden  
By his attorney  
Charles E. Foster

(No Model.)

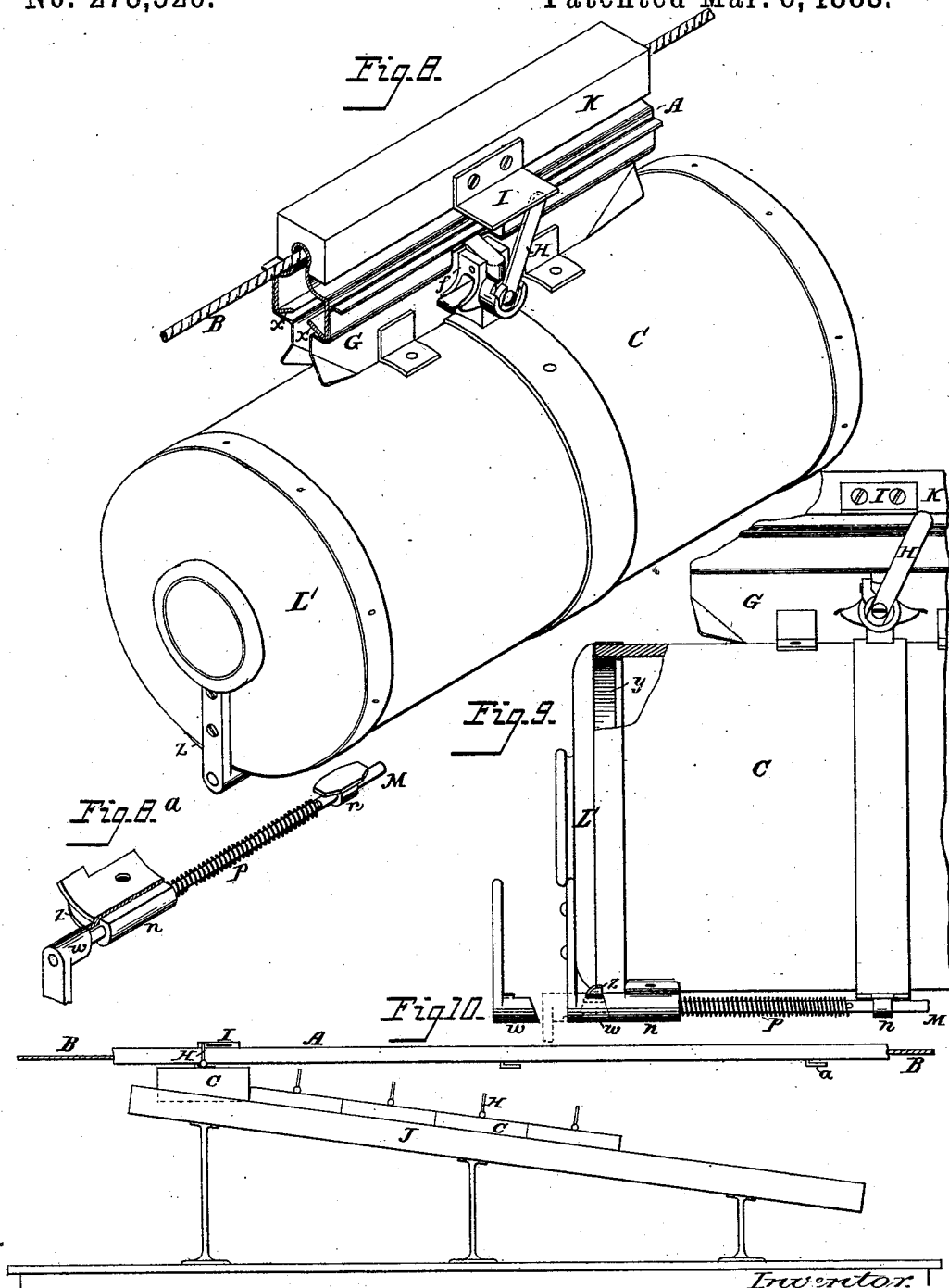
3 Sheets—Sheet 2.

H. H. HAYDEN.

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Attest:  
Guthrie & Cooper  
J. S. Sanborn

Inventor:  
H. H. Hayden  
By his Attorney  
Charles E. Foster

(No Model.)

3 Sheets—Sheet 3

H. H. HAYDEN.  
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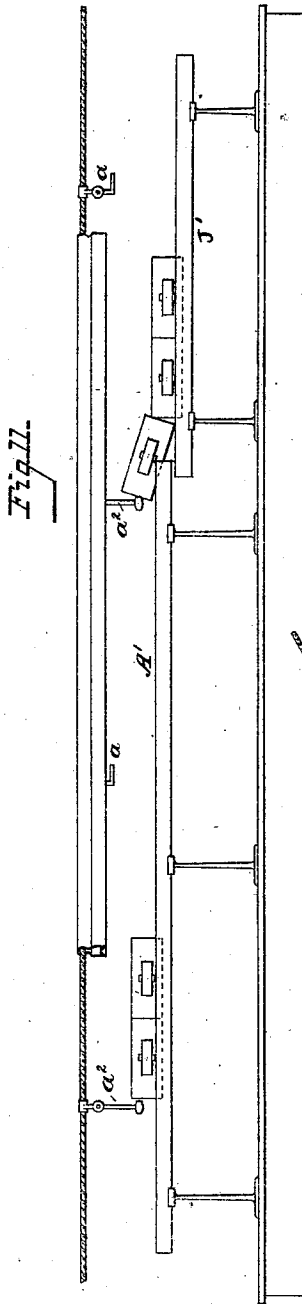


Fig. 13.

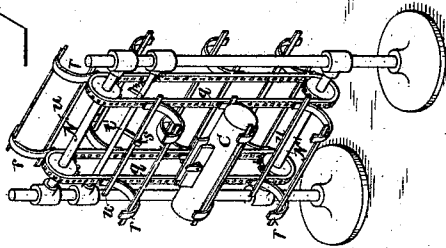
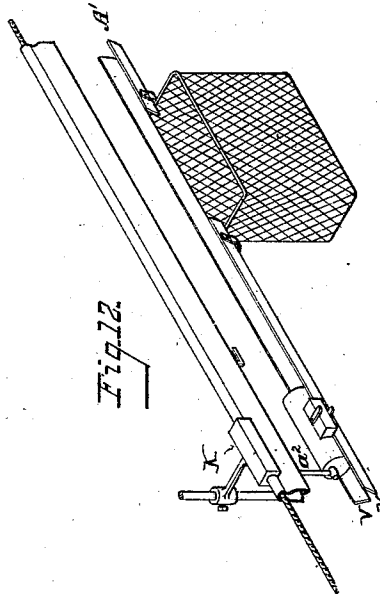


Fig. 12.



Attest:  
*Courtney A. Cooper*  
*William Paston*

*Inventor*

*H. H. Hayden*  
By his Attorney  
*Charles E. Foster*

# UNITED STATES PATENT OFFICE.

HARRIS H. HAYDEN, OF NEW YORK, N. Y.

## STORE-SERVICE APPARATUS.

SPECIFICATION forming part of Letters Patent No. 273,526, dated March 6, 1883.

Application filed November 4, 1881. (No model.)

*To all whom it may concern:*

Be it known that I, HARRIS H. HAYDEN, of the city, county, and State of New York, have invented certain new and useful Improvements in Store-Service Apparatus, of which the following is a specification.

My invention relates to that class of store-service apparatus in which carriers adapted to hold money, goods, &c., are propelled by a driving-engine between the counters and desk of a store; and the objects of my invention are to improve the means of transportation and the construction of the ways, propellers, and carriers, and of the connecting and releasing appliances.

In the drawings, Figure 1 is a perspective view illustrating my improved mode of supporting and propelling the carriers. Fig. 2 is a perspective view illustrating my improvements embodied in apparatus of a somewhat different construction. Fig. 3 is a plan view illustrating a system of graduated stops. Fig. 4 is a cross-section through a supporting-way, driving-cable, and carrier. Fig. 5 is a side view of part of the retaining and detaching appliance. Fig. 6 is a perspective view of a retaining-dog and a locking and releasing device. Fig. 7 is a cross-section on the line 1 2, Fig. 6. Fig. 8 is a perspective view, showing parts of a way and driver-rope with a carrier and retaining and releasing appliances. Fig. 8<sup>a</sup> is a detached perspective view of the device for securing the carrier-cover. Fig. 9 is a side view of part of the device shown in Fig. 8. Fig. 10 is a side view of the receiver at the terminal station. Figs. 11 and 12 are views illustrating the construction of the ways for conducting the carriers toward the desk. Fig. 13 is a perspective view, showing a modification of the terminal receiver.

Letters Patent of the United States bearing date July 6, 1880, were granted to J. C. White for a store-service system in which a series of carriers were propelled between the desk and counters of a store by apparatus driven from a suitable motor. In practically carrying out this system I have made certain improvements in the modes of supporting, propelling, retaining, and releasing, which greatly facilitate the

operations, and which I will now proceed to describe.

The "way" consists of a hollow rail or equivalent structure serving to support the carriers directly or indirectly, as hereinafter described.

As shown in Fig. 1, the way is a split tube, A, with its slot uppermost, supported beneath or over the counters in any desired position, and an endless rope, chain, band, or cable, B, moves in the tube, and is provided at intervals with fingers or catches *a*, that extend through the slot and bear upon some portion of the carrier C, which slides upon the way, rollers *a'* reducing the friction.

The carrier may be detached by means of a stationary pointed stop, D, suitably supported, so arranged as to catch a hook, *b*, projecting from the carrier, and thereby raising it from the catch *a* to release the same. Both the hook *b* and stop D may be graduated so that each carrier will be arrested at its own counter, as are the carriers described in White's Patent No. 229,783. While both means are effective in transporting and arresting the carrier, I find it preferable to reverse the tube, and employ appliances whereby to detach and drop the carrier into a suitable receptacle below the point where succeeding carriers would strike the same.

Fig. 2 represents the way with its slot at the bottom, (a form I prefer for the return-way carrying the articles from the desk to the counters,) and appliances for use with said way, the catches *a* projecting downward and hooking under dogs on the carriers, which dogs, on being released, permit the carrier to drop.

The tube A may be cylindrical, as shown in Fig. 2, the catches *a* being connected to sleeves *c*, that receive the cable B, and fit nicely in the tube, and constitute bearings or slides supporting the weight of the carriers; but in Figs. 4 and 8 I have shown a tube formed with a hollow rib, *t*, to receive the driving-cable, and with two parallel flanges, *xx*, which constitute ways, and friction-wheels *d*, which turn on journals projecting from an attachment on the cable, so as to reduce the friction of the supporting devices in passing along the ways.

This form of tube also secures increased stiffness and rigidity. The catch *a* has a horizontal terminal finger, which catches beneath the two tilting dogs *e e*, which are pivoted or otherwise movably secured to lugs *ff* upon the carrier, so that the dogs may be brought to a horizontal position, as shown in Fig. 4, to form a bearing beneath which the finger catches. The lugs *ff* are on opposite sides or parts of a substantially U-shaped guide, *G*, secured to the carrier, the sides or flanges *gg* of the guide overlapping those of the tube *A*, and serving to prevent the turning or deflecting of the carrier as it moves beneath the tube, especially when it comes in contact with its stop.

With each dog is connected a locking device, which device I have made in different ways, that shown in the drawings being most effective, and consisting of a lever, *H*, provided with a notched hub, *h*, through which extends the pivot *j*, said hub occupying a position beneath the heel of the dog and holding it horizontal until one of the notches *i* is brought beneath the dog and permits the latter to tilt.

The arrangement of the notches *ii* is shown in Fig. 7, where it will be seen that so long as the lever *H* is vertical the periphery of the hub *h* is in contact with and prevents the tilting of the dog; but if the lever is turned to either side one of the notches *i* is brought below the lever and the dogs are tilted, as shown in Fig. 8, and escape from the hook as the carrier drops. A spring, *k*, tends to maintain the lever vertical by bearing on a flat side or face, *v*, of the hub, Fig. 6, and a plate, *I*, on the tube *A* serves as a stop, against which both levers *H* are brought when the carrier is at the station where it should be dropped, the dropping being effected whatever end of the carrier may be foremost, one or more receptacles, *L*, being arranged to receive the carrier at a point sufficiently low to prevent the succeeding carriers from striking any which may be in the receptacle. These receptacles may be directly under the track; or they may be inclined at an angle, so as to move the carriers away in an oblique direction. To guard against any accidental detaching and dropping of the carriers between the receptacles, I provide continuous safety-guards to catch and retain the carriers in such event, these guards being provided with openings opposite the stops where the receptacles *L* are placed. In case of such accidental dropping of a carrier it may remain in the rack until pushed into a receptacle by a following carrier, or by one of the fingers on the belt. One form of guard is illustrated in Figs. 1 and 2 as consisting of rods *S*<sup>3</sup> *S*<sup>3</sup>, extending parallel with the way.

The stops *I* are graduated, and the levers *H* are arranged as shown Fig. 3, each stop being wider or longer, or both, than that which precedes it, there sometimes being a double system of graduation, both as to width and length, so as to increase the number of practicable

stops in the line, and the levers *H* of each carrier are so separated or adjusted as to length as to pass every stop except that at the station where the carrier is to be detached.

A convenient mode of connecting the stops is to secure a block, *K*, to the folded portion of the tube *A*, Fig. 8, and to bolt the stop-plates *I* to the sides of this block. This permits the stops to be easily adjusted to any required position. The same form of block may also be used in supporting the way-tube by fastening the block to the arms shown in Fig. 2.

It will be obvious that the dogs *e* may slide instead of tilt, and that the position of the dogs and support may be reversed, and that the dogs may bite directly on the cable. On the track leading from the salesman to the packer's desk it may be preferable, instead of supporting the carriers on the hooks *a*, to use a supplemental way, *A'*, of any suitable construction, two bars, *v v*, being shown in Figs. 11 and 12. This way extends beneath the cable, and the carriers may be placed therein and propelled by contact with the hooks *a*, or preferably by fingers *a*<sup>2</sup>, alternating with the hooks on the belt or cable. Friction-rollers may be arranged at any point to reduce friction. This plan permits the carriers to be deposited at any point with but little attention from the salesman, and avoids risk of injury by the falling of the carriers. If desired, it may be adopted on the return-way.

As it is not always convenient to remove and empty each carrier as soon as it is brought to the packer's desk, I provide appliances for receiving and retaining the carriers as they are successively brought down to the packers. This may be effected by different appliances.

Where the construction shown in Figs. 1 to 8 is employed, a trough-like receptacle, *J*, Fig. 10, may be arranged beneath the way at the receiving-desk, and a stop, *I*, large enough to open all the locks, may be placed so that each carrier brought in on a hook will be dropped after it has pushed the carriers in the receptacle (if any are already there) sufficiently forward to afford room for it to be deposited; or where the carriers are sent down the line as shown in Figs. 10 and 11 they are pushed one by one into the packer's receptacle *J'*, which is lower than the way *A'* and allows the fingers to pass over carriers lying therein.

Another form of receiver is shown in Fig. 13, where a stand supports shafts *N N'* with pulleys, round which pass endless bands *q*, connected by cross-bars *u*, provided with curved rests *r*, adapted to hold the carriers, as shown. As a carrier is dropped into the uppermost pair of rests it strikes the end of a catch, *s*, projecting from a rock-shaft, *t'*, and disconnects the same from the cross-bar *u*, and the bands then turn by the weight of the carrier, which descends until the catch engages with the next cross-bar. By this means each carrier is received and held in place until it de-

seends to the bottom of the frame, rests being provided for as large a number of carriers as may be found desirable.

The carriers may be of different forms. As shown, each is a wicker cylinder closed at one end, and provided at the other with a cap, *L'*, which is provided with an inside flange, *y*, that prevents the cap from moving laterally when in place, and is secured permanently but adjustably by a bar, *M*, extending through lugs *n* on the body. A spiral spring, *p*, tends to draw the cap toward the body, and the end of the bar *M* may be pressed upon by the finger to throw out the cap until the flange *y* is out of the body, when the cap will swing away from the end of the body. When the cap turns down a shoulder, *w*, on the cap is brought opposite a lip, *Z*, on the body, and the rod *M* and cap are retained in a forward position until the cap is brought exactly into position opposite the body, when the shoulder will escape from the lip, and the cap will be drawn back into place by the spring. By thus keeping the cap forward it may be turned to its position without its flange *y* striking the body and interfering with its movement, thus obviating the necessity of drawing up the cap to close the carrier.

It will be apparent that the way arranged beneath the cable, as shown in Figs. 11 and 12, with push-pins *a*<sup>2</sup>, does not prevent the use of the hooks or catches *a* for conveying the carriers when necessary, and that in such case it prevents injury from the detaching of the carriers accidentally from their hooks. I do not here claim this construction, however, as it will form the subject of a separate application for Letters Patent.

In a separate application for Letters Patent I have claimed the movement of carriers upon slotted tubes through which travels a continuous belt provided with push-pins. This I do not here claim.

I do not claim the invention of devices for detaching the carriers automatically at their respective stations; but

I claim—

1. In a store-service apparatus, the combination of a stationary way consisting of a split tube, carriers and devices for supporting the carriers upon the tube, and a traveling cable and devices for connecting the same detachably to the carriers, substantially as specified.

2. The combination of a slotted or split tubular way, a cable moving in the way and provided with catches for engaging with carriers supported by the way, and stop devices, substantially as set forth, to disconnect each carrier from the way at the proper station, as specified.

3. In a store-service apparatus, a way consisting of a split tube, combined with a traveling cable provided with catches, and bearings supported upon the way, substantially as set forth.

4. The within-described way for store-serv-

ice apparatus, consisting of a tube slotted at the lower side, and provided with flanges to support a bearing connected to the cable, substantially as set forth.

5. The combination of the slotted tube, cable, catch, and bearing provided with friction-rollers *d d*, substantially as set forth.

6. The combination of the traveling cable, and way consisting of a slotted tube having flanges, and carriers with guides *G*, embracing the tube, substantially as set forth.

7. The combination of the slotted tube, and stops consisting of plates *I*, secured to the tube, substantially as specified.

8. The combination, with the traveling cable and carriers, of jaws arranged upon one of the same and holding the carrier to the cable, locking devices, and stops arranged to make contact with said locking devices to open the jaws and disconnect the carriers from the cables, substantially as set forth.

9. The combination of the traveling cable provided with catches, and the carriers each provided with pivoted dogs, and locking devices constructed to release the dogs when moved in either direction, and stops *I*, substantially as set forth.

10. The combination of the carrier, pivoted dogs *e*, and levers *H*, provided with notched hubs *h*, substantially as specified.

11. The combination of the way, cable, carriers, stops, and receptacles *L*, arranged below the stops, substantially as set forth.

12. The carrier open at one end and provided with a cap, in combination with a rod, *M*, turning in bearings *n* on the carrier, and with a spring, *p*, and the shoulder *w*, and lip *Z*, arranged as set forth.

13. The combination, with the way, cable, and terminal stop *I*, of a receptacle arranged to receive and hold the carriers as they are successively dropped from the cable by contact with said stop, substantially as set forth.

14. The combination, with the way, cable, and stop device *I*, of the receiving-rack *J*, arranged as specified.

15. The combination, with the cable and its conveying devices, of a way arranged beneath the same to receive the carriers, substantially as set forth.

16. The combination of the way, cable, devices whereby the carriers are moved by and with the cable, and receptacles *J*, substantially as set forth.

17. The combination, with a traveling cable and appliances whereby carriers are moved with and automatically detached from the cable, of receptacles arranged to receive and retain the carriers when so detached, substantially as specified.

18. The combination, with a carrier, of a guide, *G*, constructed and arranged to prevent the turning of said carrier, substantially as specified.

19. The combination, in a store-service system, of ways, traveling carriers, detaching de-

vices arranged opposite the respective stations, and constructed to disconnect each carrier at the station to which it belongs, and receptacles at said stations, supported in fixed  
5 positions to receive the carriers when detached, and constructed as set forth.

In testimony whereof I have signed my name

to this specification in the presence of two subscribing witnesses.

HARRIS H. HAYDEN.

Witnesses:

F. W. BAILEY,

FRANK B. COLEMAN.