

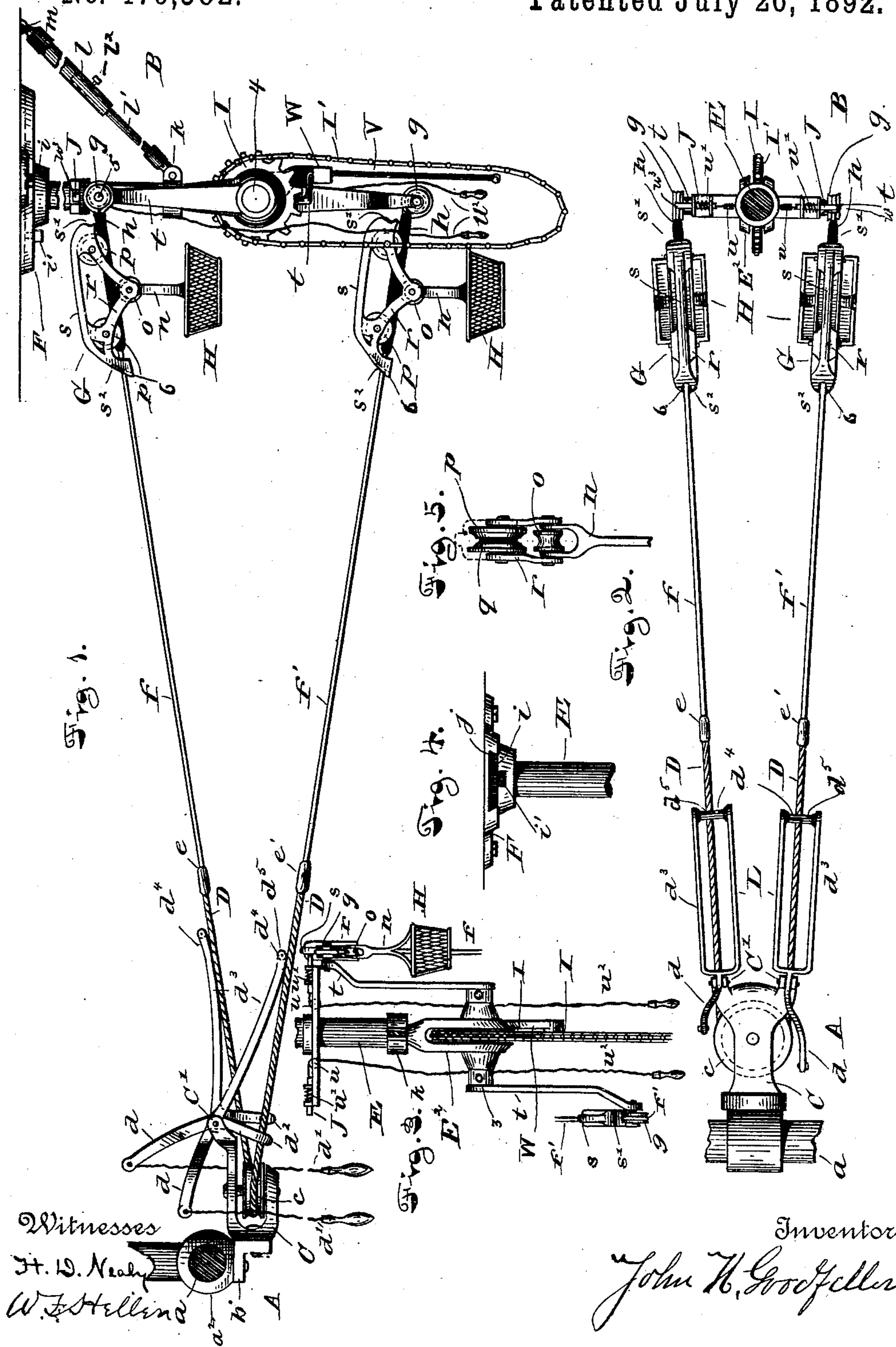
(No Model.)

2 Sheets—Sheet 1.

J. H. GOODFELLOW.  
STORE SERVICE APPARATUS.

No. 479,502.

Patented July 26, 1892.



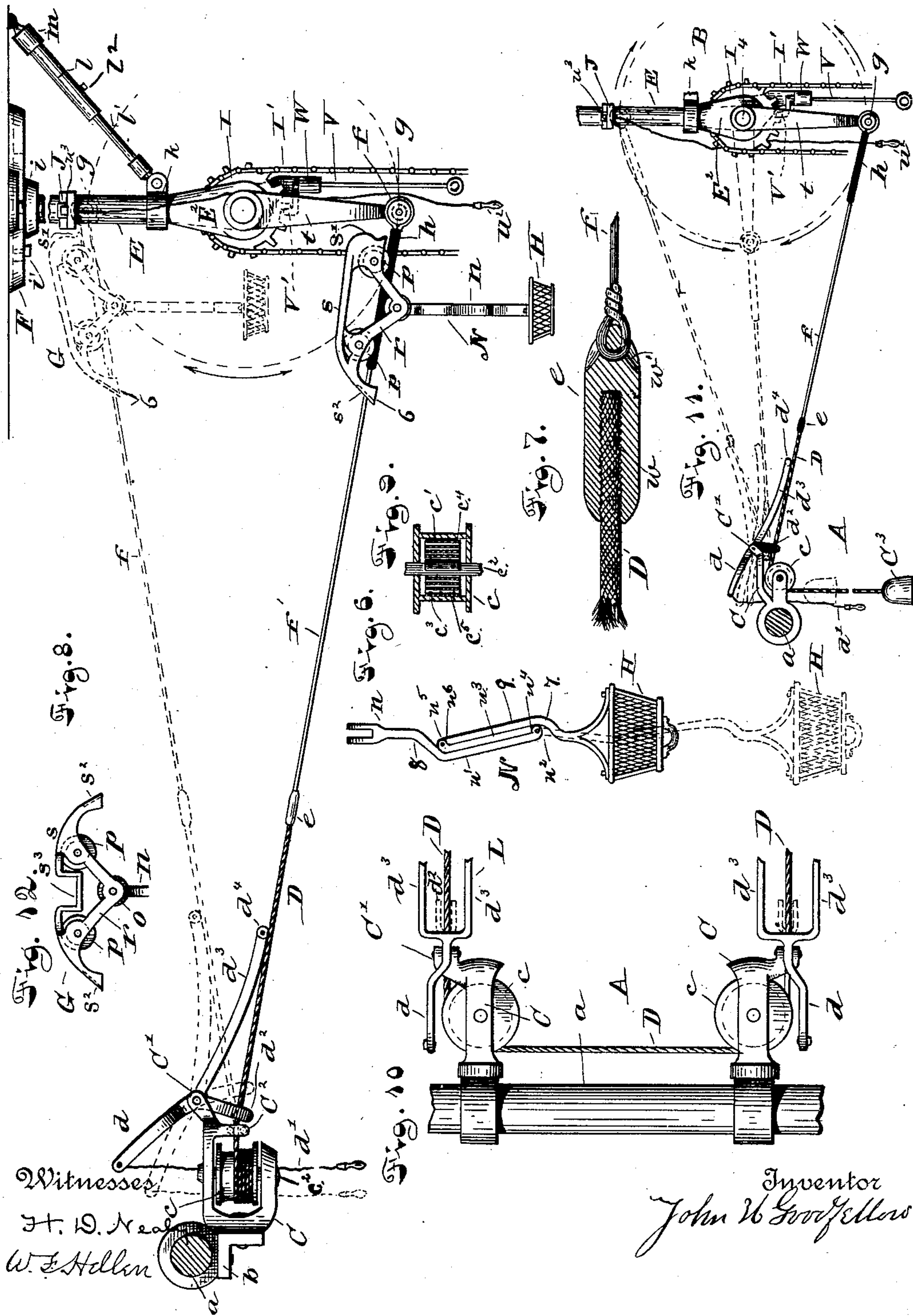
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Inventor  
John W. Groffell



# UNITED STATES PATENT OFFICE.

JOHN H. GOODFELLOW, OF LANSINGBURG, NEW YORK, ASSIGNOR, BY MESNE ASSIGNMENTS, TO THE LAMSON CONSOLIDATED STORE SERVICE COMPANY, OF NEW JERSEY.

## STORE-SERVICE APPARATUS.

SPECIFICATION forming part of Letters Patent No. 479,502, dated July 26, 1892.

Application filed September 7, 1889. Serial No. 323,257. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN H. GOODFELLOW, a citizen of the United States, residing at Lansingburg, in the county of Rensselaer and State of New York, have invented certain new and useful Improvements in Store-Service Apparatus; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

This invention relates to that class of store-service apparatus wherein the carrier travels from one station to another by gravity caused by inclining the track; and it consists in the construction, arrangement, and combination of parts hereinafter fully set forth.

In the drawings, Figure 1 is a side elevation of the improved apparatus, illustrating a double reversible inclined way and a carrier on each way at the salesman's station. Fig. 2 is a top plan view of the same, part of the track-supports at both ends of the way being omitted. Fig. 3 is a rear elevation of the apparatus at the salesman's end of the way. Fig. 4 is a detail of the adjustable track-support, the lower portion broken off. Fig. 5 is an end view of the carrier with the guard and receptacle removed. Fig. 6 is a rear end elevation of the receptacle and extension device detached from the carrier. Fig. 7 is a detail sectional view showing the device for connecting the metallic and flexible end of the way. Fig. 8 is a side elevation of a modified form of my improved apparatus. Fig. 9 is a detached sectional view of the spring and drum removed from its bracket used at one end of the way in Fig. 8. Fig. 10 is a top plan view of the left-hand end of the way, showing the devices in modified form. Fig. 11 is a side elevation of another modified form of my improved apparatus. Fig. 12 is a side elevation of a modified form of the carrier adapted to co-operate with catches at each end of the way.

The improved apparatus consists, essentially, of one or more elevating and lowering

track-sustaining levers constructed and arranged singly or in pairs at each end of the way, located at the salesman's station, and at the opposite converging ends of the way or cashier's station a suitable bracket sustaining a pulley. Between the ends of the lever or levers and around the pulley or pulleys are stretched the tracks  $f$  or  $f'$  for the carrier or carriers to travel to and fro between the terminating ends of the way or ways, the lever or levers being so mounted upon a suitable pivot or a shaft that the outer end or ends will move therewith around a common center, carrying therewith the terminating ends of the way  $f$  or  $f$  and  $f'$ . Thus if there be two levers used and they were moved they would elevate and lower their respective way simultaneously therewith, and if one way and one lever were used and apparatus constructed and arranged to support the way, and appliances for controlling the end of the way or ways, whereby the way or ways may be taken up and paid out as the levers are moved, and by which movement the ways are given a reciprocating lengthwise movement equal to the throw of the levers, which causes the track at the converging ends of the way or connecting parts forming a continuation thereof to simultaneously move with the pulley, first in one direction and then in another, as the position of the levers is changed; and it further consists in the novel construction and arrangement of a holding-stem between the receptacle and carrier, by which the former is supported in elevated position by a device hereinafter set forth; and it further consists in the novel construction and arrangement and operation of devices to be used at the end or ends of the way to arrest the carrier, and also the novel construction of the carrier to co-operate automatically therewith, and also consists in novel details hereinafter set forth.

As shown, the lever  $t$  is mounted on a suitable shaft 4, supported, preferably, by a bifurcated bracket  $E^2$ , secured to a standard, as  $E$ , dependent from the ceiling of a store, warehouse, or the like, and pins 3, passing through the hubs of each of the crank-levers and shaft, serve as a means for securing them removably thereto. Upon the said shaft I may also



arrange a suitable means—such as a sprocket-wheel I and chain I', adapted thereto, the former permanently secured upon the shaft, the office of which is to revolve the shaft and move the levers. Any other available means may be used, such as a grooved pulley and rope or a pulley and strap wound about it and suitable spring and ratchet to engage the shaft, whereby to pull upon said strap would revolve the shaft, as desired, to move the levers and ways.

To the outer ends of the lever is secured a suitable stud 5, on which are mounted the pulleys *g*, having grooves in their faces and adapted to hold therein the terminating end of the track wound therearound and then about the track itself, thus providing a pivot-joint for the ends of the ways.

The ends of the way *f* and *f'* adjacent to the levers is provided with an enlarged straight portion *h*, surrounding it and securely affixed thereto and preferably made of rubber or leather, of such proportions that it will closely fit between the large treads *q* of the upper wheel P and lower wheels O of the carrier, (see details, Figs. 1 and 5,) thus providing a combined stop and retainer which will readily enter between the said upper and lower wheels and gradually stop and hold the carrier against rebound and because of its elasticity will readily yield and permit the displacement of the carrier therefrom, as will hereinafter appear.

As shown, the tracks *f* and *f'* are joined together at the terminus A or common point by suitable connecting appliances, (see detail,) in which *e* is a ferrule having a screw-thread *w* in one end adapted to receive, preferably, a braided rope D or other flexible material. The opposite end of said ferrule is furnished with an wire *w'*, through which the ends of the track-wire *f* or *f'* are passed and wound about itself to form permanent connection. As thus provided the flexible portion is arranged upon the pulley *c* in the bracket C, and the terminating ends of the way being secured to the lever or levers, as described.

As shown, the standard E is preferably made adjustable to the ceiling by fish-plate F, dovetail *i*, and dovetail groove *j* and secured in adjusted position by set-screw *i'*.

*k* is a clamp-collar on the pendant, and *l'* is a connecting means consisting of gas-pipe of two sizes, preferably arranged to telescope each other, and provided with suitable means *l<sup>2</sup>* for adjustably connecting thereto means, as *m*, which is a pivoted connection on the ceiling.

The office of these devices is to take up the slack of the way by adjustment of the set-screws *i'* on the dovetail and the set-screw *l<sup>2</sup>* on the pipe connection forming the brace, the operation of which needs no further description.

*a* represents a part of the fixture, which may consist of a framework of gas-pipe, to which is connected the clamp *a<sup>2</sup>*, and to that a suitable angle-plate *b*, and to this I pivot

the bracket C, supporting the pulley *c*. As thus pivotally connected the latter is adapted to adjust itself to the position of the ways as they are changed; also, I provide a novel automatic tilting catch, in which *d<sup>3</sup>* represents one or more arms, which are connected by a bar *d<sup>4</sup>* or may preferably be provided with a rubber or wooden roller *d<sup>5</sup>* or other suitable means therebetween, and *d<sub>1</sub>* is a lever connected thereto at one side of its pivot C', and *d'* an operating cord-extending downward therefrom, by which the tilting catch is operated to release the carrier, and *d<sup>2</sup>* is an ejector forming a part of the tilting catch and extending downward therefrom approximately at right angles from the pivot-joint and extended arms *d<sup>3</sup>*. Said ejector is preferably furnished with bifurcated ends, so as to straddle the way. (See dotted lines in Fig. 10.) The carrier is also made of a novel form, in which the forward end *s<sup>2</sup>* is bifurcated and straddles the way and extends therefrom in an inclined form to a position above the wheels, thus forming the prow, which may be at both ends should it be found available to use the tilting catch in lieu of the enlarged yielding portion at the terminating end of the way. The guards *s*, extending rearward from the prow and over and downward in rear of the wheel forming the bumper *s'*, as thus constructed are adapted to co-operate with the devices at both ends of the way.

By reference to Figs. 2 and 3 will be seen a means for engaging the bumper *s'* to displace the carrier from its holding device after it has attained its elevated position with the way, which I will now describe.

J is a bracket suitably secured to the pendant E and projecting out on either side in a position which will adapt it to support a suitable bolt *u<sup>3</sup>*, which serves as a buffer-engaging stop, and *u* is a suitable pulley mounted in the bracket J and provided with an operating-cord *u<sup>2</sup>*, which extends down to within convenient reach, (see Figs. 1, 3, 8, and 11,) the office of which is to contact with the carrier or devices holding it, whereby the carrier G is released, and, as a further object, when the bolt is withdrawn by the operating-cord *u<sup>2</sup>* to admit of the carrier escaping in a backward or forward movement with the lever, as desired.

As shown, I provide one or more drawbolts *u<sup>3</sup>*, mounted in the upper side of said bracket J, and a spring to press the bolt in extended position and in the path of the carrier. To this bolt is connected the operating-cord *u<sup>2</sup>*, passing over the pulley *u* and down to within easy reach, so that when the levers *t* are turned with a carrier upon the lower way to be dispatched and a carrier is also upon the upper way empty and it is necessary to dispatch a carrier with a purchase the operating-cord *u<sup>2</sup>* is pulled down upon to withdraw the bolt. The pawl W, adapted to engage the teeth of the sprocket-wheel, is thrown out of engagement by turning it one



side with the connecting-rod V, the lower end of which may be provided with a suitable handle for this purpose. After this is done the chain or cord I' is pulled down upon. This revolves the sprocket-wheel I and shaft 4, by which the levers *t* are moved with their connecting way or ways at the terminus of the way or ways until the empty carrier is moved in rear of the bolt, when the bolt is released to its normal position. Thus continuing to pull on the chain will elevate the carrier forward and upward and then backward until the buffer end of the carrier contacts with the stop-bolt on the bracket, thus forcing it off of the yielding enlargement *h*, the carrier moving rapidly down the incline to the other end, when the prow *S*<sup>2</sup> on the end of the carrier *G* rides beneath the forward end *d*<sup>4</sup> of the tilting catch *L* to facilitate the entering of the carrier beneath the catch, and to provide a yielding stop to meet the buffer end of the car I provide the said forward ends of the tilting catch with a roller *d*<sup>5</sup> therein. When the carrier has fully entered within said catch, the bifurcated end of the prow engages the arm *d*<sup>2</sup> and forces the end *d*<sup>4</sup> down in rear of the car, thereby preventing rebound, the contacting parts being preferably provided with said rubber roller.

If it is desired to send another purchaser's sale to the desk, the operation is repeated, with the exception that it would not be necessary to operate the draw-bolt. When the carrier had reached that end of the way, it will be seen that the levers and ways are in position to return the first purchase, and to dispatch that one from the bundle-desk is to but simply pull down on operating-cord *d*'. This will move the lever *d* on the pivot *C*', and thereby raise the tilting catch *d*<sup>3</sup>, and at the same time the arm *d*<sup>2</sup>, acting as an ejector, is forced against the end 6 of the car, whereby it is ejected from the tilting catch, which assumes its normal position, preferably resting on the way. Thus the carrier is dispatched down the way to the lower end thereof.

As a precautionary measure to prevent noise of the carriers contacting with devices at the lower ends of the way or of damage to themselves or the fixtures I prefer to secure in a satisfactory manner a rubber enlargement *h*, or of leather, of sufficient size and length as will be capable of entering between the wheels *P* and *O*, which will so fit to the enlargement that they will impinge and gradually stop, and thereby hold the carrier without rebound.

As a provision for locking the levers in any desired position I provide the bifurcated bracket *E*<sup>2</sup> with a downwardly-projecting arm *W*, of sufficient length to extend, preferably, beneath the sprocket-wheel *I*, as shown in Figs. 1, 8, and 11. By this arm I support in a pivoted position the crank-bolt *V'*, having an end turned up of sufficient dimension and form as will adapt it to engage between the

teeth of the sprocket-wheel. Said crank-bolt may be adjustably mounted upon or otherwise connected to the upper end of the operating-cord V, the turning of which will throw the bolt in or out of engagement, as desired.

Referring to Fig. 8, I illustrate a modification of my apparatus employed for moving the ways to change their inclination to cause the carrier thereon to gravitate from one end to the other.

As shown, at the saleman's end of the way the apparatus is as complete as that illustrated in Figs. 1 and 2, with the exception that but one lever is shown employed; but at the central station or cashier's end of the way is arranged the pulley *c*, pivoted upon a fixed shaft *c*<sup>2</sup>, passing vertically through it and the bracket *C*, in which it is permanently secured. This pulley may be provided with a suitable chamber *C*<sup>3</sup> and a suitable coil-spring *C*<sup>4</sup>, one end of which is secured to the pulley at *C*<sup>5</sup> and the other end to the said shaft. As thus constructed and arranged the pulley is revolved to tension the spring. When the flexible portion *D* of the way is secured thereto, the spring will recoil and wind the flexible portion about its periphery and there hold the way taut in whatever position the lever *t* is moved, its weakest position being when the end of the lever is in position horizontal inside of its pivoted connection. To facilitate the guarding of the flexible connection to and from the pulley, I may provide a pair of sheave-pulleys mounted in the bifurcated arm *C*<sup>2</sup>, between which pulleys the flexible connections may pass.

By reference to Fig. 11 is shown the same construction and arrangement of way, lever, and operative appliance, and the same description of operation will apply to Fig. 8, as also Figs. 1 and 2, in which two levers are shown employed, both of which are pivotally connected to the diverging end of the ways. The flexible portion thereof passes over said pulley, whereby to move the levers will cause the ways to reciprocate from one to the other, thus paying out and taking up alternately the ways as they are moved by the levers. In Fig. 11 the flexible portion is shown passing over a pulley *c* and the free end provided with a weight to take the place of the spring *c*'. The operation of these devices are substantially alike, so far as means goes for the taking up and paying out the way as the levers are moved.

The operation is as follows: Assuming that the carrier is in position shown in Fig. 8, the disconnecting-lever is turned to unlock the lever, when by pulling down on the chain *I'* the way and lever are moved forward (being partially aided by the weight until it has reached its limit) and upward until the levers are in a vertical position, when the rear end is forced against the stop-bolt *u*<sup>3</sup> to force the carrier off of the yielding retainer. The lever may now be fastened by moving the stop in position to hold the lever and way taut



until the carrier has traveled to the other end of the way, when the said lever may be released and moved to its former position and there locked by moving the bolt V in position, the operation of Fig. 8 being the same, with the exception that the flexible connection is wound upon the pulley by the spring. It will be plainly understood that two levers may be pivotally connected to the pendant E and may be secured to a shaft 4 and operating appliance to move the levers in unison, as in Fig. 1, and the opposite ends of the ways supported and passing over pulley c and their terminating ends controlled by a spring or weight, whereby two or more pairs of oppositely-inclined service-lines diverging from a common point may be employed, a pair of which running to a single station and carriers adapted thereto to travel by gravity are in order. It will also be observed that the levers, as just described, may be independently pivoted and supported by any suitable pendant, as E, and the operating appliances duplicated to operate them.

By reference to Fig. 10 the brackets C, supporting the pulleys c, are shown separated and the forward portion of the arm  $d^3$  broken off and the ejector  $d^2$  (shown in dotted lines) straddling the track. The brackets as thus shown are adapted to be adjusted at suitable distances apart at a common point, and the flexible portion of the way D, passing over them, showing a slight modification of the bracket shown in Figs. 1 and 2.

In Fig. 7 is illustrated the means employed for connecting the metallic and flexible ends of the way together, in which e represents an elongated nut having a thread w cut therein from one end, into which is firmly screwed the braided flexible section D. The opposite end is hollowed out and a hole therein, through which one end of the metallic or wire connection is passed and bent back and the end thereof closely twisted about the body of the wire and cut off. As shown, the metallic proportions of the nut are shown exaggerated, as it is desirable that the body of said nut shall be slightly larger than the flexible connection.

In Fig. 6 is illustrated my improved extensible supporting means, which has for its novelty but one direct line of moving arms by which the receptacle is held in elevated position by the pivot-joints being moved to assume a position whereby they are adapted to support in a raised position by the equilibrium of the placed pivot-joint.

N represents the device, consisting of two arms 8 and 9, one of which, as shown, is provided with a hinge-joint n, adapted to be connected to the carrier-frame, preferably as shown in Fig. 5; but any other means of connection, pivotally or fixed, could be done without departing from the spirit of my invention and the arm 9 rigidly secured to the receptacle. Each of said arms is provided with a suitable hinge or pivot-joint  $N^2$  and  $N^5$ , and

is also provided with crooked portions  $N'$  and 7. The object of this is to place the pivot-joints of each arm on opposite sides of a vertical line. To the ends of said arms I connect by the link  $N^3$ , having, respectively, hinge or pivot joints  $N^4$  and  $N^6$ , which are connected to the hinge or pivot joints of said arms. As thus constructed and arranged they are adapted to lie one upon another in a position substantially as shown. It is desirable to pivot the arm 8 to the frame of the carrier with the hinge or pivot pin passing through at right angles to the line of travel, and thereby cause the receptacle to swing in line with the motion of the carrier. As thus connected I prefer to arrange the pivot of the connected arms at right angles to the line of travel, and by so doing there is no danger of the receptacle falling to its lowest position by any ordinary shock; but as a provision for this emergency a spring or gravity latch attached to the arm to contact with the joint  $N^5$  in raised position may be employed. As shown, to lower the receptacle press upon the receptacle and hold it to the left. This will throw the upper joint out of position, when the receptacle can be lowered to position shown in dotted lines, Fig. 6, and to return the receptacle is to lift it up as far as possible and carry to the right, where it will support itself. If desired, the hinge-joints of said lower arm and link may have suitable springs of sufficient tension to assist their upward movement. It is considered a primary object to have an apparatus so operative that each station may have two carriers, whereby a second transaction may be sent to a common point or station, where the goods are checked, examined, and done up and returned without waiting for the other carrier to return, and to accomplish this object I may arrange my operating appliances in pairs when desired and extend them to a common point, and, according to the length of the way to be traveled, I may use levers of varied lengths.

In Fig. 12 is illustrated a modification of my improved carrier, in which case it is provided with a prow  $S^2$  at both ends and a buffer between the wheels, said car adapted to act at both ends of the way, and in which case the arm  $d^3$  of the tilting catch might be shortened, which would adapt it to coact therewith.

Any suitable means may be used for revolving the shaft in either direction, whereby the way or ways are raised from one inclination to another and given a reciprocating motion, and devices for taking and paying out the way whether it be interchanged by one lever to another or taken up and paid out by spring or weight, whereby the inclination of the way is changed to gravitate a carrier without departing from the spirit of my invention.

Having thus described my invention, what I claim is—

1. In a cash and parcel carrier apparatus,



the combination, with two ways and a carrier adapted to move on each of said ways, of two pivoted arms, each of said arms supporting one end of each way, a pulley for supporting the opposite ends of the ways, means for moving said arms to change the inclination of the respective ways, and a flexible connection attached to the ends of the ways, substantially as specified.

10 2. In a cash and parcel carrier apparatus, the combination, with two ways and a carrier adapted to move on either of the ways, of two pivoted arms suitably mounted and supported so as to alternately raise and lower the two  
15 ways connected thereto, a suitably-mounted pulley serving as an intermediate support at the opposite terminus of the ways, whereby the movement of the arms will cause each way to move bodily over the pulley, and suitable operating appliances to revolve the crank-shaft to alternately change the position of each way for the purpose of causing the carrier or carriers to gravitate in either direction, substantially as described.

25 3. A store-service apparatus consisting of a way pivotally connected to and supported by an arm secured to a shaft journaled in a suitable support and the other end supported by a pulley, suitable connecting devices for  
30 holding the way taut against the action of the arm, a carrier on the way and means for holding it near the lever, means for contacting the carrier and imparting a motion thereto upon the arm moving upwardly, and a catch retaining the said arm in a raised position, whereby  
35 the carrier will be impelled along the way by gravity, substantially as described.

4. In a cash and parcel carrier apparatus, the combination, with a cash and parcel carrier, of an extensible support therefor consisting of a pair of crooked arms, one of which is pivotally connected to the carrier-frame, so as to swing loosely therefrom in the line of travel, and the other rigidly connected to the receptacle, and a connecting-link having its opposite  
45 ends pivotally connected to the free ends of the said arms and adapted to move thereon at right angles to the line of travel, said arms being so constructed and arranged that when

the receptacle is elevated the pivotal connections of the receptacle arm and link will be at a point past the vertical line of the opposite pivotal point, whereby the receptacle will be retained in a raised position, substantially as described. 50 55

5. In a cash and parcel carrier apparatus, the combination of a way supported at one end by a pivoted arm and the opposite end supported by a pulley, a spring connected to the said pulley, causing the latter to take up  
60 the said way, a sprocket-wheel and chain for operating the lever to change the inclination of the way, and a latch for locking the arm in any desired position, substantially as described. 65

6. In a cash or parcel carrier apparatus, the combination, with two connected pivoted arms, of a horizontally-pivoted bracket having a vertically-pivoted pulley therein, and a way passing around the said pulley and having its  
70 opposite ends secured to the said arms, and means whereby the said arms may be alternately raised and lowered, substantially as described.

7. In a cash or parcel carrier apparatus, the combination, with a horizontal shaft, of two arms extending therefrom in opposite directions, a sprocket-wheel mounted on the said shaft, a way having its opposite ends secured to the ends of the said arms, a pulley around  
80 which the central portion of the way passes, and spring-actuated pressed bars extending contiguous to the paths of the ends of the said ways when elevated and adapted to engage the carriers thereon or to make contact with  
85 the said carriers and to impart a movement thereto, and a chain passing over the said sprocket-wheel, whereby the ends of the said way may be alternately raised or lowered by revolving the said shaft, substantially as described. 90

In testimony whereof I affix my signature in presence of two witnesses.

JOHN H. GOODFELLOW.

Witnesses:

J. R. NOTTINGHAM,  
WM. H. DE LACY.