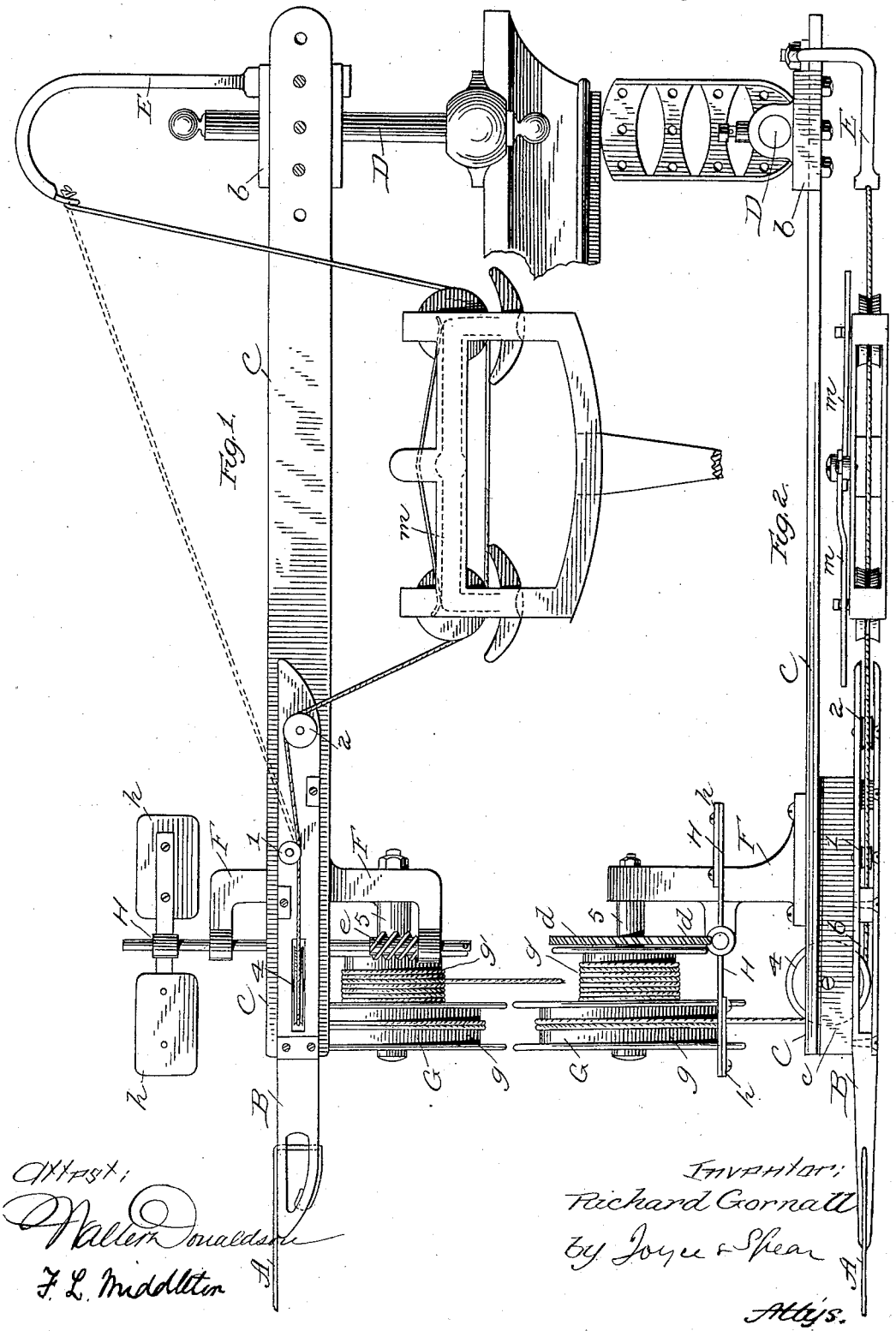
(No Model.) 4 Sheets—Sheet 1.

R. GORNALL.

STORE SERVICE APPARATUS.

No. 342,256. Patented May 18, 1886.



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(No Model.) 4 Sheets—Sheet 2.

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STORE SERVICE APPARATUS.

No. 342,256. Patented May 18, 1886.

Fig. 3.

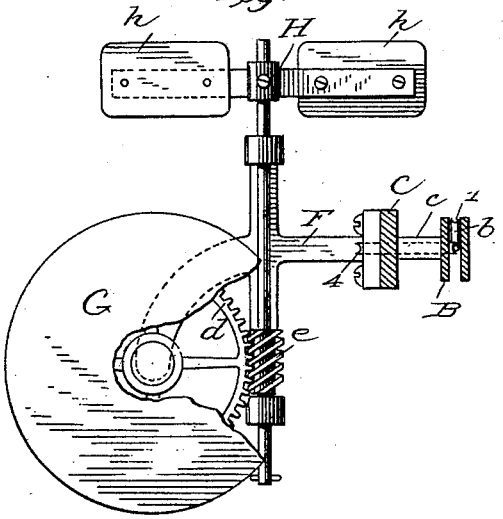

Fig. 7.

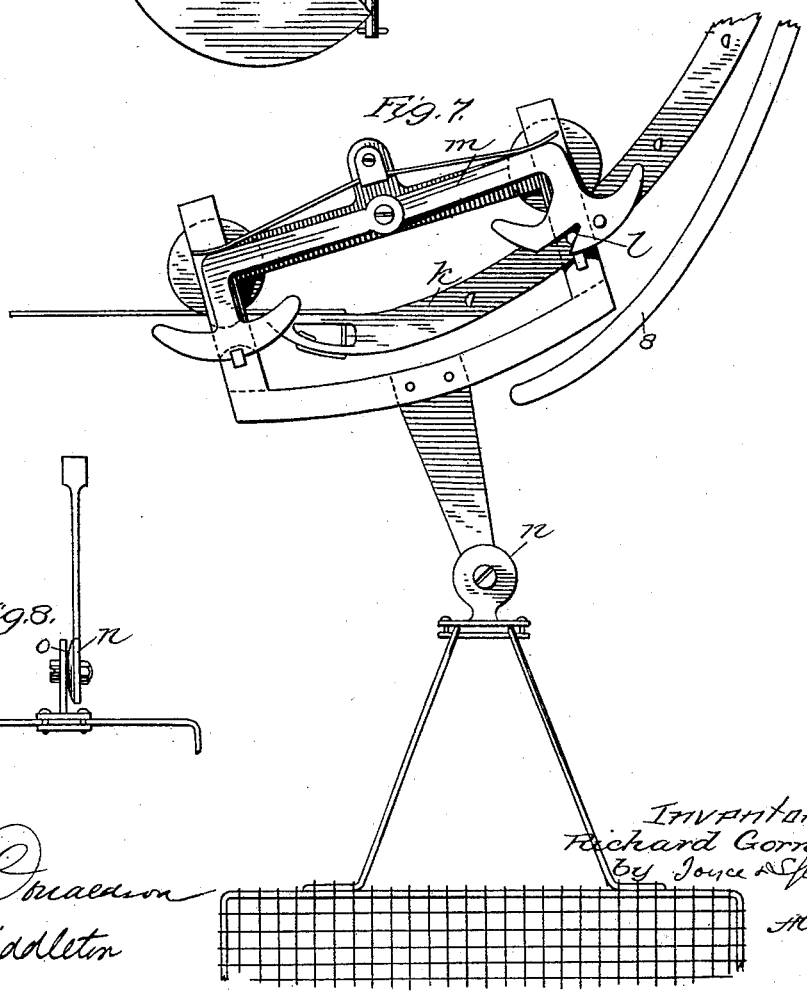

Fig. 8.

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(No Model.) 4 Sheets—Sheet 3.

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STORE SERVICE APPARATUS.

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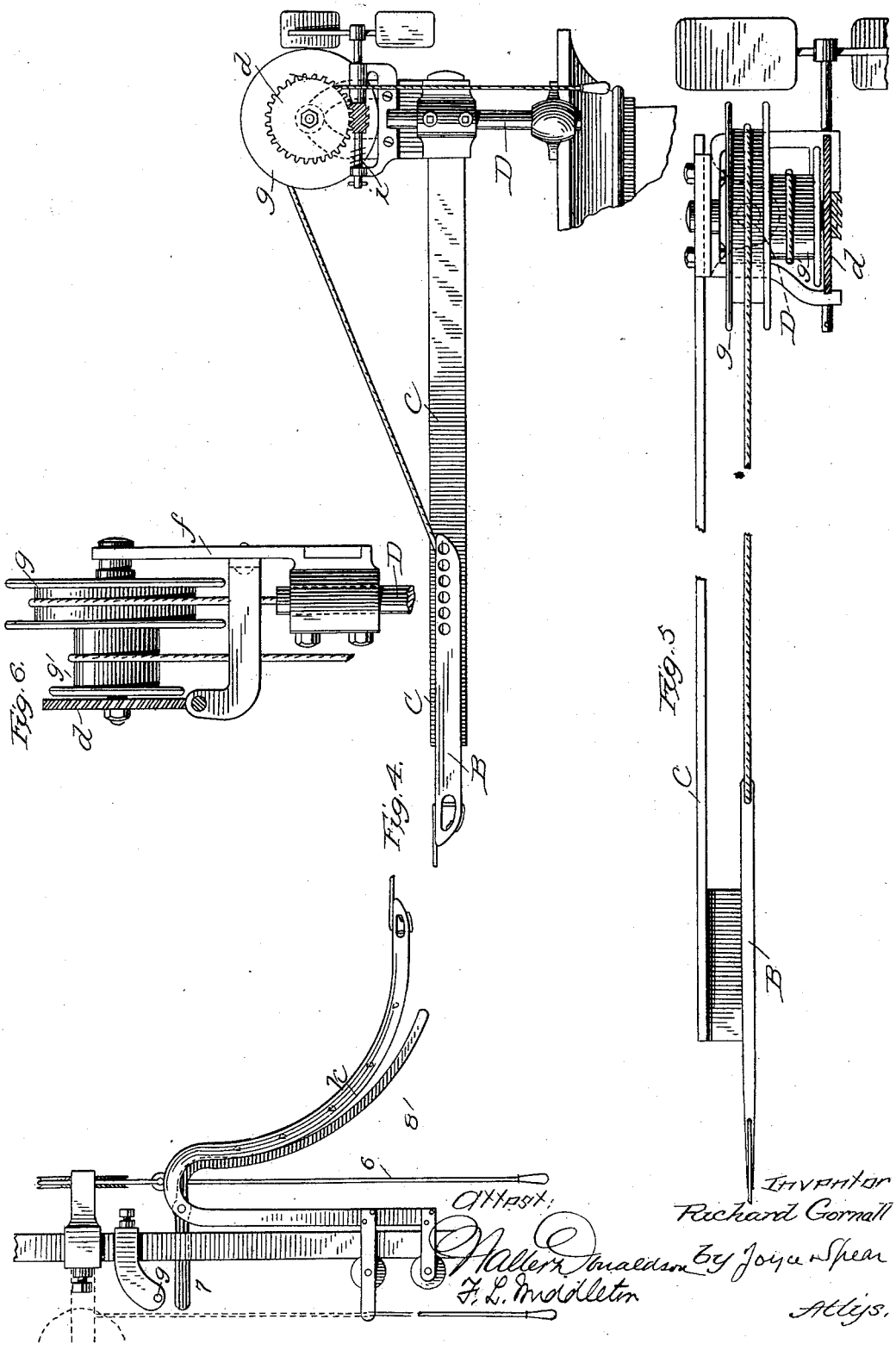

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(No Model.) 4 Sheets—Sheet 4.

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STORE SERVICE APPARATUS.

No. 342,256. Patented May 18, 1886.

Fig. 9.

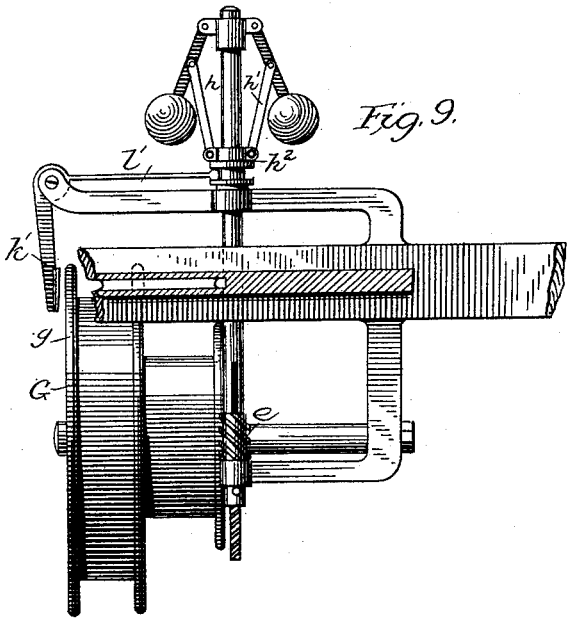
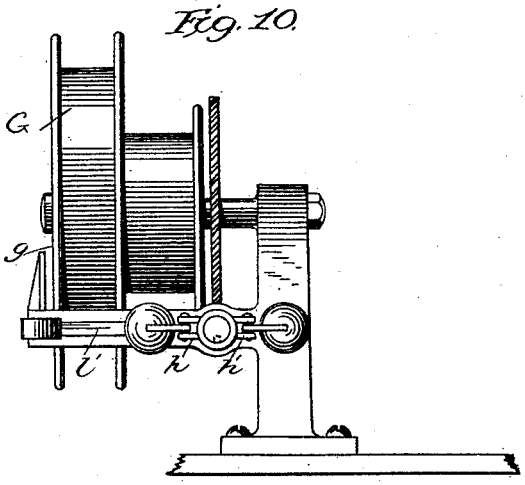


Fig. 10.



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UNITED STATES PATENT OFFICE.

RICHARD GORNALL, OF BALTIMORE, MARYLAND, ASSIGNOR OF ONE-HALF TO GEORGE A. DUBREUIL, OF SAME PLACE.

STORE-SERVICE APPARATUS.

SPECIFICATION forming part of Letters Patent No. 342,256, dated May 18, 1886.

Application filed March 26, 1886. Serial No. 196,709. (No model.)

To all whom it may concern:

Be it known that I, RICHARD GORNALL, of Baltimore, State of Maryland, have invented a new and useful Improvement in Store-Service Apparatus; and I do hereby declare that the following is a full, clear, and exact description of the same.

My invention is an improved store-service apparatus; and it relates to that class in which a wireway is used having a flexible extension at one end, whereby the carrier is adapted to be lowered within reach of the salesman, and to be elevated thereupon to the wireway; but while the present invention contains the element of the flexible extension, it is essentially different from all other devices containing this element, as will be hereinafter fully explained.

Heretofore devices have been known consisting of a wire fixed at the cashier's desk and vertically movable at the salesman's counter, with a flexible extension of the way at either end adapted to lower the carrier to within reach of the salesman or cashier; but this arrangement has been found to be objectionable for many reasons, among others that the salesman has not only the labor of raising the carrier upon the flexible extension of the way to the main way, but also to operate the end of the way to incline it toward or from the cashier's desk.

The principal object of my invention is to divide equally the labor of operating the apparatus, and at the same time to provide a simple and efficient arrangement without complication of parts.

My invention therefore consists of a way located between the cashier's desk and the salesman's counter, with a raising and lowering device at the cashier's desk, whereby the way may be inclined toward or from the salesman's counter, with the end of the way at the salesman's counter secured to a frame which is permanently fixed, a flexible medium being provided between the end of the way proper and the place of support at the salesman's counter, whereby the carrier may be lowered to within reach of the salesman from the main track and elevated thereto, all as hereinafter fully described.

The invention still further consists in numerous devices and combinations of devices, hereinafter fully described and specifically claimed.

In the accompanying drawings, Figure 1 represents a portion of the way and its supporting-frame at the salesman's counter, a portion of the carrier being also represented, the flexible extension of the way being shown as partially lowered in full lines and elevated in dotted lines. Fig. 2 is a plan view of the same. Fig. 3 is a front view of Fig. 1, partially in section, with some of the parts broken away. Fig. 4 is a view of the mechanism at the salesman's counter and also that at the cashier's desk, the way between being omitted in order that the two positions may be seen, the construction at the salesman's counter is slightly modified from that shown in Figs. 1 and 2. Fig. 5 is a plan view of Fig. 4. Fig. 6 is a rear view of the drums shown in Fig. 4 for controlling the flexible extension of the way, the fan being omitted and its shaft shown in section. Figs. 7 and 8 represent details of the carrier. Figs. 9 and 10 represent a modification.

In these drawings, referring to Fig. 1, A represents the wireway, of which but the small section is shown. It is secured in a well-known manner to a metallic extension, B, which forms a continuation of the said way. This extension B is secured to the frame C by means of a web, *c*, as shown in Fig. 2, and this frame C is held in a socket, *b*, at its opposite end, the said socket being supported upon a post, D, by means of a set-screw, as shown in Fig. 2. The socket is adjusted upon the post in putting up the apparatus, so that a right angle is obtained. The post is held in position by means of a suitable base-plate. The extension B broadens out in width as it leaves the end of the wireway, and, as shown in Fig. 2 at *b*, is slotted for the greater part of its length, the slot extending to the rear. Small pulleys 1 2 are provided within this slot, and suitable bearing-blocks are provided upon either side of these pulleys, so as to strengthen the slotted portion of the extension and to prevent springing of the parts. A horizontal slot is made in one branch of the slotted extension B, as shown in Fig. 1, where one of the parts is removed, and the periphery of the wheel 4 enters this slot so as to be

in line with the pulley 1, above described. This wheel is arranged horizontally and has its bearing in a web, being fitted in a slot cut therein. From the end of the frame C to the rear of the supporting-post projects an arm, E, which is bolted to said frame and extends laterally therefrom to a point in line with the extension B, from which point it is bent upwardly, being bent over toward the front, as shown in Fig. 1. From the eye formed in the end of the arm E is supported a rope or other flexible medium which extends therefrom to the slotted extension B, passing over the pulley 2, under the pulley 1, and around the wheel 4. This rope forms the flexible extension of the way, and is adapted to receive the carrier and to lower it to within reach of the salesman, and also to elevate the same to restore it again to the way.

I will now describe the means for permitting the descent of the carrier upon this extension, and for the raising of the same back to the main way. From one side, at the front end of the frame C, projects a bracket, F, which has an arm, 5, projecting at right angles thereto to the front, and upon a pin extending through this arm is supported a drum, G. The larger part, *g*, of this drum receives the end of the flexible way after it passes over the wheel 4, the end being permanently secured to said pulley. Over the smaller part, *g'*, of the drum the rope for elevating the carrier is wound, this rope being provided with a handle which is within reach of the salesman. The part *g'* has a flange upon one side to keep the coils of rope in place, and secured to this flange is a gear-wheel, *d*. From the bracket F, at a point between the arm E and the frame C, supplemental bracket-arms extend, which form bearings for the shaft of the fan H. The supplemental bracket-arms are in vertical position, and the fan-shaft is likewise supported in this position, having blades *h* upon its upper end, which is sufficiently above the track to be out of the way. Immediately above its lower bearing a worm-thread, *e*, is formed, the threads being of greater diameter than the shaft and meshing with the teeth of the gear *d*, as shown more plainly in Fig. 3. The fan-shaft is revolved by the action of the gear upon the worm in one direction; but in the opposite rotation of the gear the teeth simply slip over the worm-threads as the shaft lifts slightly under the action of the teeth, the fan thus not being acted upon in the reverse movement of the gear. It will thus be seen that when the carrier has been sent from the cashier's desk toward the salesman's counter, (the flexible extension being in the position shown in the dotted lines in Fig. 1,) the carrier passes from the way to the extension B, and from thence over the slotted portions of the flexible portion of the way, which immediately begins to lower under the weight of the carrier. As the carrier lowers the rope unwinds for this purpose from the drum *g*, which causes it to revolve, and as this unwinds the operating-cord is wound up upon the drum *g'*. The gear *d* revolves with the drum and engages with the worm-teeth of the fan-shaft and causes the same to revolve, the action of the fan thus retarding the descent of the carrier and allowing it to be lowered gently to within reach of the salesman. When it is desired to return the carrier to the cashier, the operating-cord is drawn upon by the salesman, which reverses the movement of the drum and winds upon the end of the flexible extension of the way, and consequently raises the carrier and restores it to the way, but no action is communicated to the fan for the reason heretofore described. It may be stated here that as the flexible extension simply passes over the pulley 2 and under the pulley 1 in the elevation of the carrier the inclination of the said extension is from its point of support from the end of the arm E to the lower periphery of the pulley 1, and the carrier is thus elevated above the edge of the track B, so that it descends upon the body of the track and meets with no obstructions in its course onward to the cashier's desk.

In Figs. 4, 5, and 6 a modification is shown of the construction above described. In Fig. 4 the extension B is secured in like manner to the frame C by a web, but is in one piece, and has simply a slot in its rear end and a holding device to retain the end of the flexible way, which is secured permanently thereto. Instead, as in the first figure, of having the retarding and elevating mechanism at this point, I place it at the rear of the supporting-frame. The frame C is supported upon a post, D, by a suitable bracket extending inward, the post being in line with the way. An arm, *f*, extends upward, forming a part of this bracket, and upon a pin supported therein the winding-drum, of a similar construction to the drum described above, has its bearing, being provided with large and small drums *g* *g'* and with the gear *d*. The fan-shaft is supported in the bracket extending from the vertical arm *f*, the fan-shaft being of the same construction as heretofore described, and being so arranged that the teeth of the gear-wheel *d* will mesh with the worm on the said shaft. The operation of the parts is similar to that above described; but as the fan in this figure is arranged horizontally a light spring, *i*, is arranged to keep the worm in position to gear with the teeth. In the reverse action of the drum and gear this spring allows the worm slight movement under pressure of the teeth of the gear *d*, and thus no action is communicated to the fan. It will be observed, also, that by reason of the construction and location of the retarding mechanism, as shown in the figures referred to, the end of the flexible extension which is connected to the drum *g* is in direct line with the supporting-post, and this serves to strengthen the parts and to take up all the strain. In this construction, as shown in Fig. 4, the forward end of the flexible extension is not secured directly to the end of

the extension B, but a little forward of the end, so that the advantage obtained by the construction first described is also secured here, and no obstruction offered to the progress of the carrier.

In Figs. 9 and 10 I have shown a modification of the retarding mechanism, substituting, instead of the fan shown in the forms previously described, a governor mechanism and a brake. In these figures the double drum G, with the gear-wheel, is of the same construction as heretofore described, the worm, instead of being made fast to the fan-shaft, is splined thereon, as shown, so that in the reverse action of the drum and gear-wheel, when the carrier is being lifted to the track, the teeth of the gear simply slip over the teeth of the worm, lifting it slightly, and as it is not secured to the shaft the shaft itself is not moved. Upon the upper part of the shaft is fixed a collar having ears projecting from either side, from which are pivoted governor-balls on suitable arms. Arms h h' connect with the arms of the governor-balls about their center, being pivoted thereto, and extend down, being secured to a sliding collar, h^2, as shown. This collar is grooved annularly, and in this groove rests the enlarged end of the steel spring i', the other end of said spring being secured to a brake-arm, k', the two combined constituting a bell-crank lever with its pivotal point at the end of the brake l', the end of the brake-arm extending down so as to bear upon the outer periphery of the wheel g.

In the operation of the device, when the car leaves the main track and begins its descent on the flexible extension, the drum G is revolved and the gear-wheel d, acting upon the worm e, will revolve the governor-shaft, to which it is splined, and the centrifugal force imparted thereto will throw the governor-arms outward from the center of the shaft. As they rise outward and upward, this action will elevate the collar h^2 through the arms h', carrying in its upward movement the spring i', which action will throw in the brake-arm k' and apply friction to the periphery of the drum G, and thus retard the descent of the carrier in the manner heretofore described. It will also be understood that as the frame supports the extension of the way by means of a web, the carriers used upon said ways must be adapted to pass such webs, and I have shown such a carrier. It is not necessary, however, to particularly describe the same, as it is included and claimed in a separate application filed by me in the United States Patent Office February 11, 1886, No. 191,611.

I desire it to be understood, however, that I do not limit myself to the use of this particular carrier in connection with my improved way, as the form of carrier may be changed in many ways without departing from the spirit of my invention.

It will be understood that as the way at the salesman's counter is permanent, and is not adapted to be raised and lowered to incline the way, that means for this purpose must be provided at the cashier's desk, and while I have shown in this application particular means for this purpose, I do not limit myself thereto, as in other applications pending I have described various devices by which the end of the way may be raised and lowered, and any one of these devices may be made to take the place of the construction herein shown and described.

The raising and lowering mechanism shown in the left of Fig. 4 is particularly described in a pending application, the serial number of which is 191,609, with the exception the curved bar, which forms an extension of the way at this end (indicated at k,) has projecting pins upon one side, instead of the notches, to adapt it to the form of carrier shown in Fig. 7, this carrier having notches l in one of its spring-arms, m, said notch engaging with the pins and holding it in proper position. The curved form of the extension serves as a buffer to stop the car. In its forward movement the spring-arm slips over the pins; but when it comes to a stop and begins its return down the incline, the spring-arm will catch over the first pin in its path.

In order that the basket attached to the carrier may not have an objectionable swinging motion imparted to it by changes of inclination of the body proper of the carrier, I provide a joint, as shown in Figs. 7 and 8, at the point n, and place a spring-disk, o, between the opposing faces, this disk serving as a friction-plate and preventing the basket from swinging. When it is desired to return the carrier to the salesman, the cashier, or, more properly, the person who receives and wraps up the bundles at this end of the line, elevates the way by drawing upon the cord 6, which passes up over a pulley and connects with the moving frame, and as the frame rises the end 7 of a kicker, 8, comes in contact with a stud, 9, which elevates the front end of the kicker, lifts the spring-arm from the pin over which it is caught, and the curved shape of the extension will give it an impetus to the way, the inclination of which will carry it to the salesman's counter.

I do not claim, broadly, a main track with a flexible medium, forming a continuation thereof, inclined at an angle greater than said main track, as this is shown in English Patent No. 737 of 1869.

I claim as my invention—

1. In a store-service apparatus, a way attached at the cashier's desk, so as to be vertically adjustable to incline it in one direction or the other and permanently secured at the salesman's counter, combined with a flexible medium, forming an extension of said way, adapted to receive and lower the carrier to within reach of the salesman, substantially as described.

2. In a store-service apparatus, a way having its end at the cashier's desk vertically movmovable, and permanently secured at the

salesman's counter, with a flexible medium forming an extension of said way, and mechanism, substantially as described, connected with the free end of the flexible extension, whereby the descent of the carrier is retarded, substantially as described.

3. In a store-service apparatus, a wireway vertically adjustable to incline it in one direction or the other at the cashier's desk, and permanently secured at the salesman's counter, with a flexible extension, forming a continuation of the way, extending from a bracket on the end of the way, where it is secured, to a retarding mechanism intermediate between the wire and the end of the way, substantially as described.

4. In a store service apparatus, a wireway vertically adjustable at the cashier's desk, and permanently secured at the salesman's counter, a metal extension, B, having a slotted rear part, and a flexible extension secured at the end of the way and passing through the slot of the part B, and attached to a retarding mechanism suitably supported upon the framework of the way, whereby the carrier is transmitted over the wire A and its extension B to the flexible extension, by which it is lowered to the position of the salesman, and means for elevating the same, substantially as described.

5. In a store-service apparatus, the wireway vertically adjustable at the cashier's desk, and permanently secured at the saleman's counter, and a metal extension, B, having a slotted rear end and guiding-pulleys 1 2, of a flexible medium secured at the end of the way, passing through the slotted extension B over the pulleys 1 2 to the retarding mechanism, a mechanism for raising the flexible extension to replace the carrier upon the way, the rear point of support of said flexible medium being at a height above the level of the way, whereby it forms an inclined plane to the pulley 1, thus depositing the carrier upon the way forward of the end of the extension B, substantially as described.

6. In a store-service apparatus, the combination, with the way having a flexible extension, of a retarding mechanism therefor, consisting of the drum G, formed in two parts, the larger of which receives the end of the flexible extension and the smaller the rope for elevating the carrier to the way after it has been lowered, a gear-wheel adapted to move with said drum, and the governor and its shaft having a worm upon its end adapted to mesh with the gear, substantially as described.

7. The combination, with the way secured at one end to a raising and lowering device, of the carrier mounted upon said way having spring-arms upon one side, whereby it is adapted to pass by webs, by which the way is supported, with the locking-notch in one of said arms adapted to register with pins upon the curved extension *k* at the cashier's desk, substantially as described.

8. In combination, a way having a curved extension at one end adapted to be raised and lowered, a carrier mounted thereon, a basket connected to said carrier, and a friction-plate between the two at the point of connection, whereby the carrier is prevented from swinging, substantially as described.

9. In a store-service apparatus, the combination, with the way having a flexible extension, of a retarding mechanism therefor, consisting of the drum G, formed in two parts, the larger of which receives the end of the flexible extension and the smaller the rope for elevating the carrier to the way after it has been lowered, a gear-wheel adapted to move with said drum, a shaft carrying a worm on its lower end adapted to mesh with said gear, and a governor mechanism carried upon its upper end connected with a brake-arm, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

RICHARD GORNALL.

Witnesses:

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