

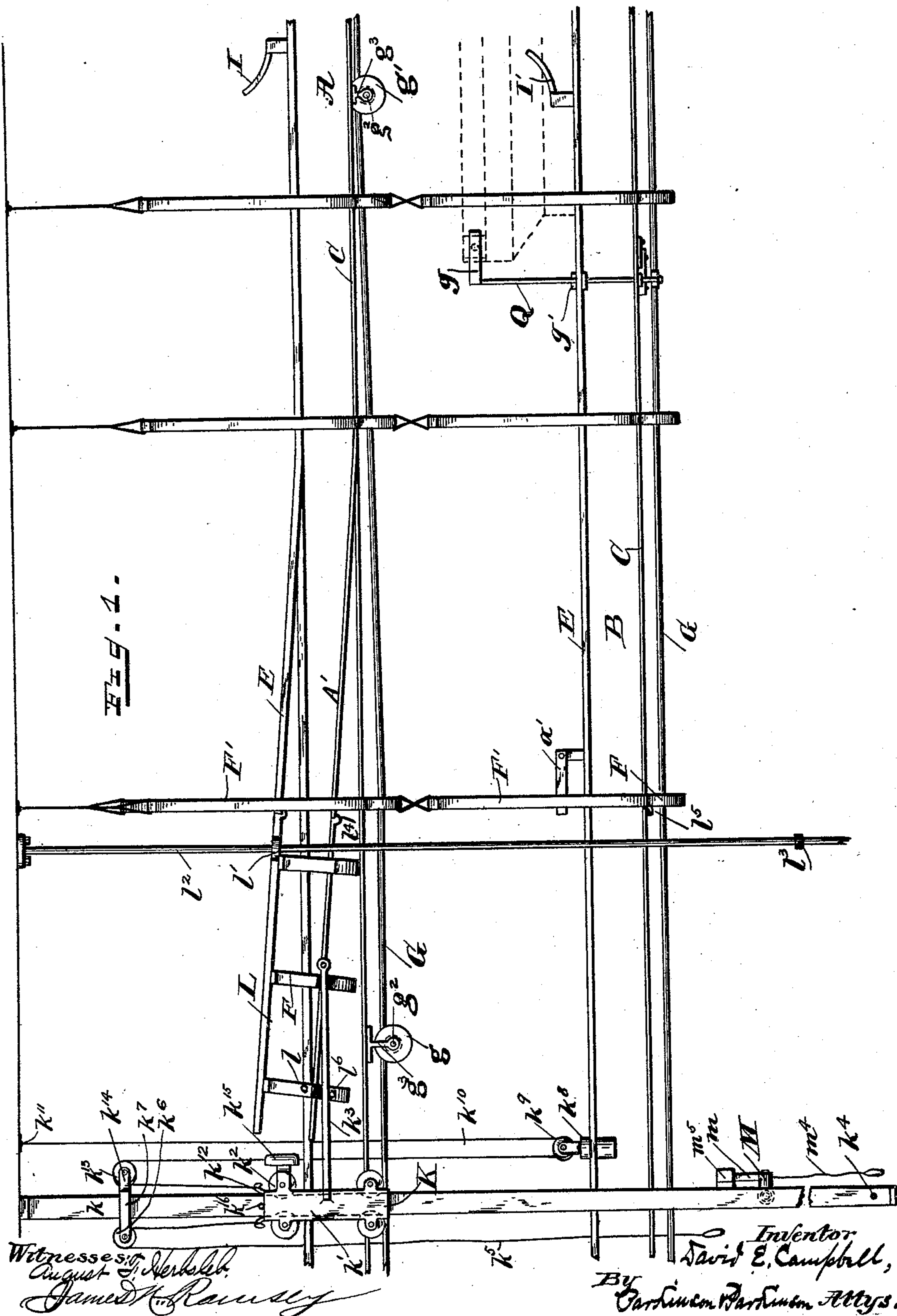
(No Model.)

7 Sheets—Sheet 1.

D. E. CAMPBELL.
CASH AND PACKAGE CARRIER APPARATUS.

No. 475,265.

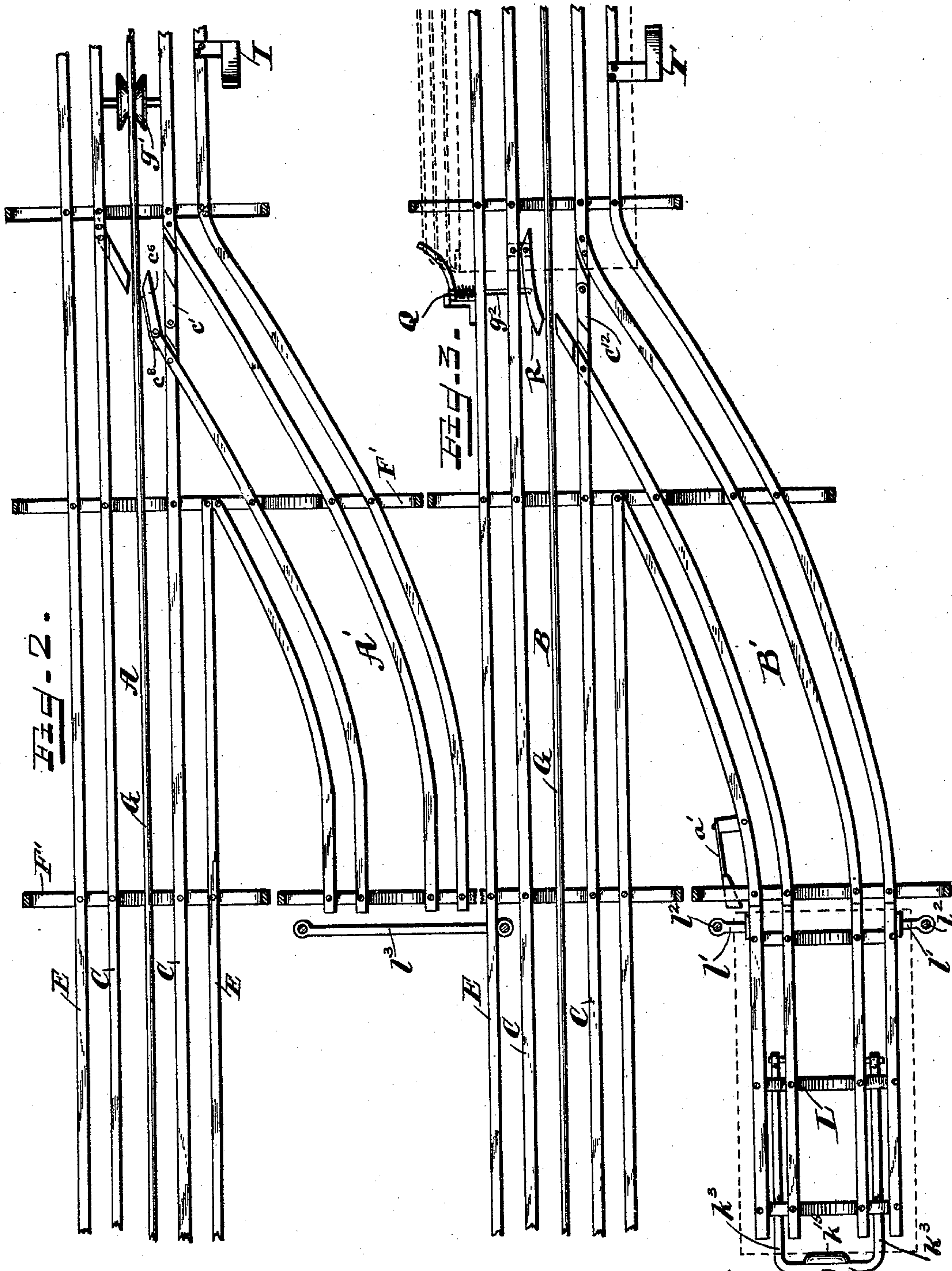
Patented May 17, 1892.



7 Sheets—Sheet 2.

CASH AND PACKAGE CARRIER APPARATUS.

Patented May 17, 1892.



David E. Campbell *Inventor*
By *Partinen, Partinen, Attys.*

(No Model.)

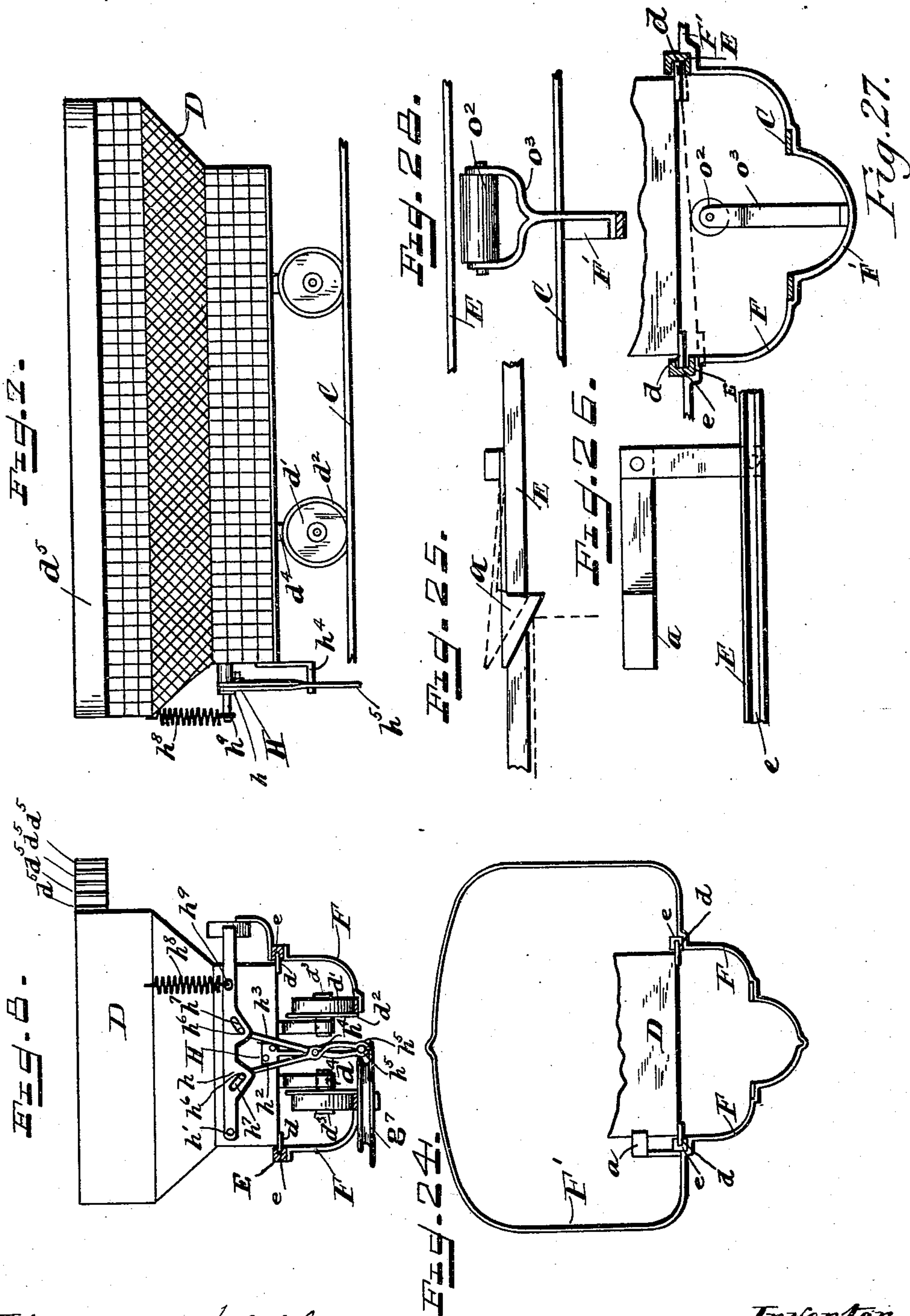
7 Sheets—Sheet 4

D. E. CAMPBELL.

CASH AND PACKAGE CARRIER APPARATUS.

No. 475,265.

Patented May 17, 1892.



Witnesses
August P. Verbeke.
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(No Model.)

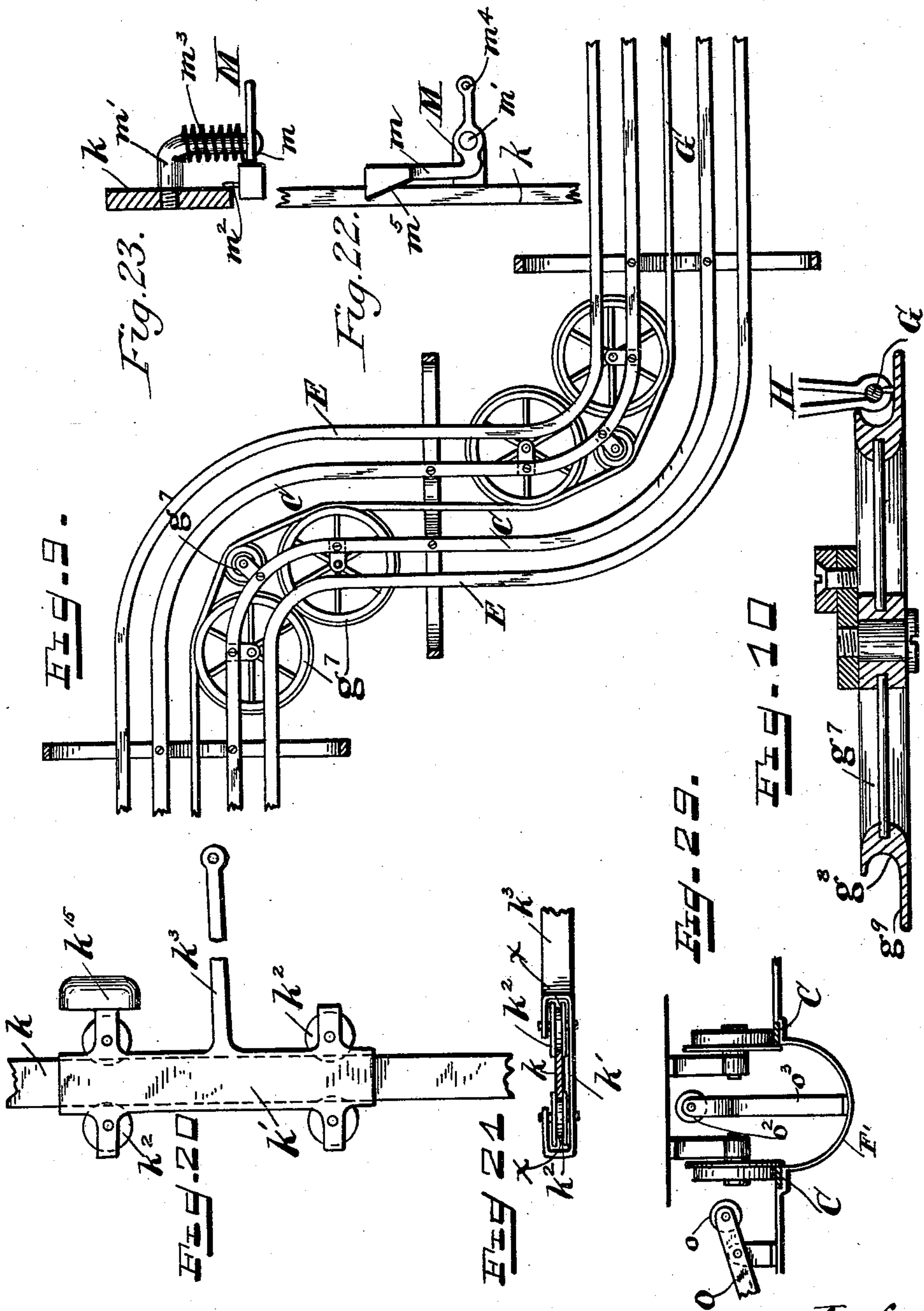
7 Sheets—Sheet 5.

D. E. CAMPBELL.

CASH AND PACKAGE CARRIER APPARATUS.

No. 475,265.

Patented May 17, 1892.



Witnesses

Witnesses
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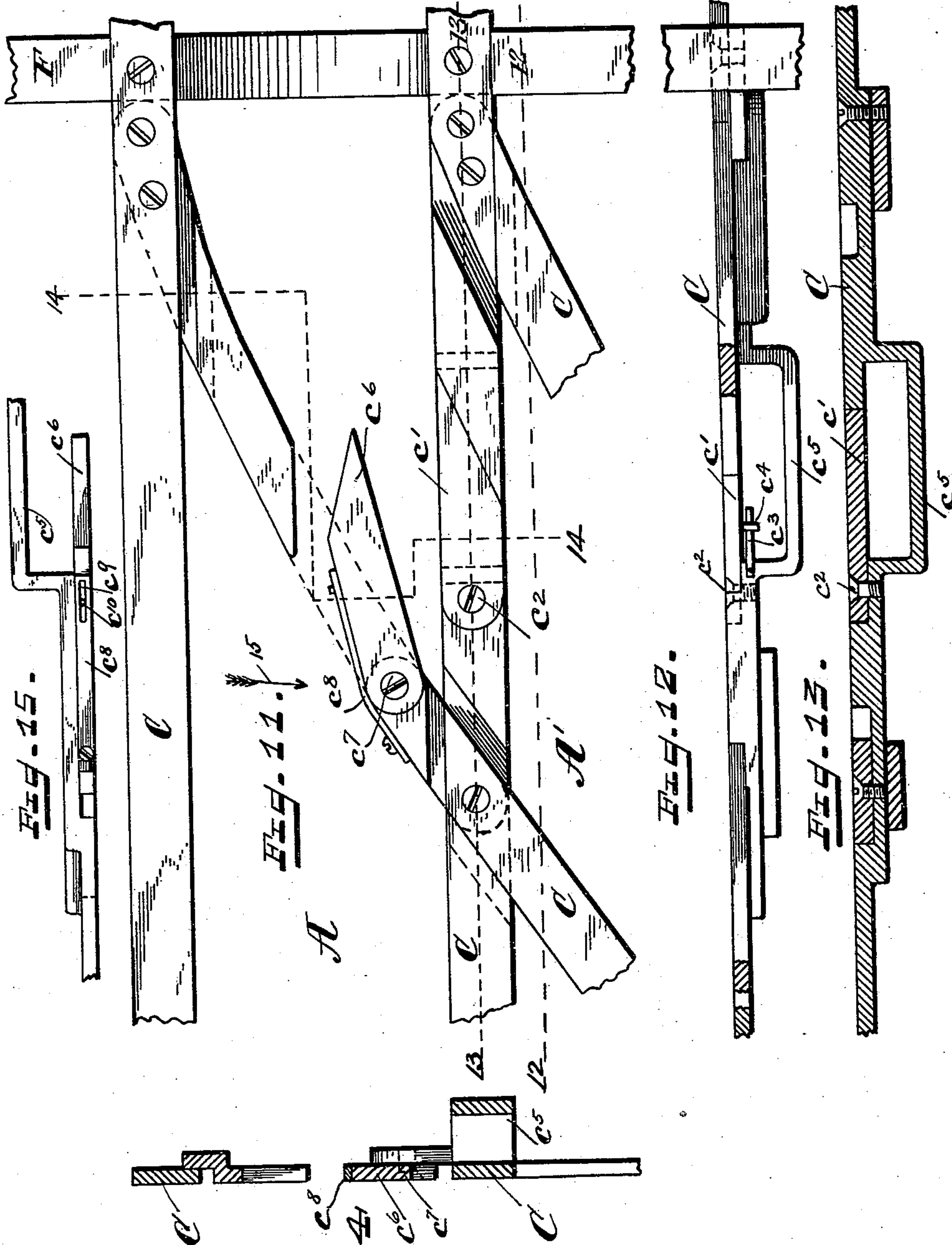
(No Model.)

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D. E. CAMPBELL.
CASH AND PACKAGE CARRIER APPARATUS.

No. 475,265.

Patented May 17, 1892.



Witnesses
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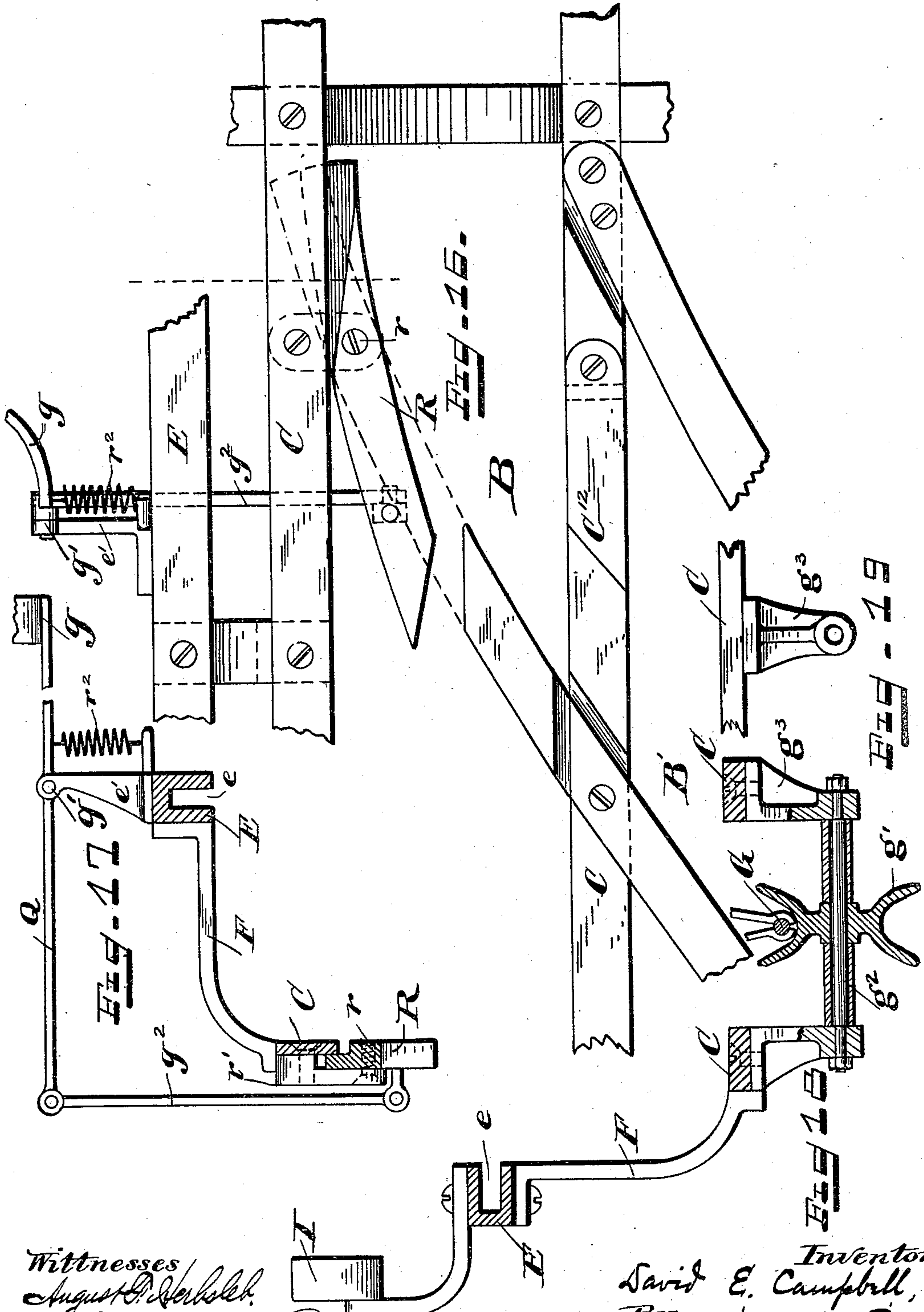
(No Model.)

7 Sheets—Sheet 7.

D. E. CAMPBELL.
CASH AND PACKAGE CARRIER APPARATUS.

No. 475,265.

Patented May 17, 1892.



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UNITED STATES PATENT OFFICE.

DAVID E. CAMPBELL, OF CINCINNATI, OHIO.

CASH AND PACKAGE CARRIER APPARATUS.

SPECIFICATION forming part of Letters Patent No. 475,265, dated May 17, 1892.

Application filed April 2, 1891. Serial No. 387,455. (No model.)

To all whom it may concern:

Be it known that I, DAVID E. CAMPBELL, a citizen of the United States, residing at Cincinnati, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in Package and Cash Carrier Systems, of which the following is a specification.

My invention relates to that class of devices consisting, essentially, of a track having a car traveling thereon propelled by an endless cord or cable, the car being adapted to receive and convey packages, parcels, or cash from station to station or from the various counters in a store to a wrapping-table or cashier's desk.

My invention consists in the parts and combination of parts hereinafter claimed.

In my improved apparatus I prefer to employ two roads or lines of track, one of which may be above the other, the cars on one road traveling in one direction, those on the other traveling in the opposite direction. At intervals I provide stations from which the cars may be sent along the track and at which they may be received on their return, which for the sake of clearness in description I will call "way-stations," and at a suitable other point, usually at the wrapper's table or cashier's desk, I provide another station, which I will call the "terminal station," at which the cars from the various way-stations may be received. The way-stations and cars are provided with interacting tripping devices adapted to trip the grips on the cars and cause the same to engage with or release the cable and with other tripping mechanism adapted to direct the cars into their predetermined stations.

In the drawings, Figure 1 is a side elevation of a portion of the road and of one of the way-stations, showing the elevator in its raised position. Fig. 2 is a top plan view of the upper road; Fig. 3, a top plan view of the lower road; Fig. 4, a side elevation of the terminal station; Fig. 5, an end view of the same; Fig. 6, a side view of the bottom of the inclined way, showing the signal. Fig. 7 is a side view of a car, showing the grip and device for throwing the switch. Fig. 8 is an end view of the same. Fig. 9 shows a curve in the road in a horizontal plane; Fig. 10, a vertical cross-section of one of the horizontal sheaves. Fig. 11 is a top plan view of the track and siding for

the outgoing car at one of the way-stations. Fig. 12 is a vertical section on the line 12 12 of Fig. 10. Fig. 13 is a similar section on the line 13 13 of Fig. 10. Fig. 14 is a vertical cross-section on the line 14 14 of Fig. 10. Fig. 15 is a side elevation of the swinging plate in the track of the siding, looking in the direction of arrow 15, Fig. 10. Fig. 16 is a top plan view of the track and siding for the incoming car at one of the way-stations, showing the automatic switch. Fig. 17 is a side view of the automatic switch, showing the track in section. Fig. 18 is a vertical cross-section showing the track and guide-rail for the car and bars connecting the same, the trip for opening the grip, and pulley for supporting the cable and raising the same into line with the grip. Fig. 19 is a side elevation of the bearing for the axle carrying the supporting-pulley. Figs. 20, 21, 22, and 23 are details of the elevator. Fig. 24 is an elevation of the track-supporting hanger. Fig. 25 is a top plan, and Fig. 26 a side view of the catch at the stations for retaining the car. Fig. 27 is an end view, and Fig. 28 a side elevation, of the detached roll and bracket, on which one end of the car will rest and tilt when it arrives at the terminal station; and Fig. 29 a detail showing the relation of the bracket to the inclined way.

A represents an upper road, on which the cars from the various way-stations may travel to a terminal station, and B a lower road, on which the cars may return from the terminal station to their respective way-stations.

A' is a siding for the forwarding-car or car traveling to the terminal station, and B' a siding for the return car or car traveling from the terminal station. The siding A' connects with road A and the siding B' with road B.

C C are tracks, on which a car D is adapted to travel, and E E are guide-rails preferably provided with longitudinal grooves *e*, into which projections *d* on the car D are adapted to take, thereby holding the car to its track. The grooves may be of any desired shape. The tracks and guide-rails are connected by braces F. At intervals the roads are provided with suitable hangers F', preferably connecting with the braces, adapted to support the roads from the ceiling or other suitable point. The sidings are supported in a

similar manner. The siding for the forwarding-car is preferably inclined, the car being carried down the same to the main road by gravity. When the car reaches the main road, it grips the cable, as hereinafter explained.

An endless rope or cable G travels along the road and serves as the motive power for the cars. It is supported at intervals on sheaves g and at each of the way-stations on the forwarding-road by an elevating-sheave g' , adapted to raise the cable into line with the grip on the car, so that the latter may clamp the same. These sheaves may turn on axles g^2 , secured in hangers g^3 , supported by the road. Motion is imparted to the cable by means of a power-wheel g^4 , Fig. 4, driven by a suitable motor. The cable passes from the forwarding-road at the terminal station over a sheave g^5 , thence over the power-wheel, thence to a sheave g^6 at the end of the return-road and along the latter. Sheave g^5 is placed sufficiently low to permit the grip on the car when released to pass it freely, sheave g^6 being placed sufficiently high to throw the cable into level with the grip. At the other end of the road the cable may pass over a suitable take-up sheave adapted to conduct the cable from the return to the forwarding road and take slack from the same.

Fig. 9 illustrates a curve in the road in a horizontal plane. The cable at such curve passes over one or more sheaves g^7 , provided with grooves g^8 , in which the cable may travel, and at its lower edge with a flange g^9 , adapted to retain the cable on the sheave. The sheave is so arranged that the grip in passing rests on its periphery, as shown in Fig. 10, preventing any lateral strain on the grip. Each curve is preferably provided with two large sheaves and an intermediate smaller sheave of the construction described, adapted to keep the cable in a line of travel corresponding with the curve.

The car D is adapted to travel on wheels d' , provided with flanges d^2 . The wheels may be mounted on stub-axles d^3 , supported in hangers d^4 , depending from the bottom of the car.

H is a grip attached to the car adapted to clamp the cable. The grip consists, preferably, of a lever-arm h , pivoted to the car at a suitable point, as at h' . Depending from the lever-arm are two levers h^2 h^3 , pivoted to a rod h^4 , extending from the car. The levers preferably intersect each other at their pivotal points and are provided with gripping-jaws h^5 h^5 . The upper ends of these levers are provided with lugs h^6 , taking into and sliding in slots h^7 in the lever-arm, the slots being inclined toward each other. The clamping device is so arranged that movement of the lugs in the slots in one direction will close the grip and movement in the other direction will open the grip. A spring h^8 is attached to the car at one end and to a pin h^9 on the lever-arm at the other, and so arranged as to normally close the clamping-jaws. The lever-

arm h extends beyond the side of the car and is adapted to take against and be depressed by suitable trips I I' I^2 . The trip I is placed in the forwarding-road a short distance beyond the siding near the elevating-sheave g' and is adapted when the car enters the main track from the siding to open the grip, allowing the latter when it closes to clamp the cable, which has been raised into its plane by the elevating-sheave. The trip I' is placed on the incoming road near the junction of the siding and adapted to open the grip and release the cable therefrom, leaving the car free to enter the siding. The trip I^2 is placed near the terminal station and is adapted to open the grips on all the cars. The lever-arm on a car from any particular way-station is of different length or differently placed from those on the cars from other way-stations, the trip on the forwarding and on the incoming road adapted to co-operate with such lever-arm being correspondingly arranged, so that a car will be tripped at its predetermined station, but freely pass other stations in its travel.

The cars are provided preferably at their side with contact-pieces d^5 , adapted to operate switches for the sidings on the incoming track. The contact-pieces on the cars destined to the various stations project various distances beyond the car, the switch-lever and contact-piece being arranged to coact when a car arrives at its predetermined station.

Each way-station is provided with an elevator K for raising the car to the forwarding-road and for receiving it on its return. It consists, preferably, of an upright k , having a traveler k' sliding thereon provided with anti-friction wheels k^2 , having grooves x and taking about the upright. The traveler has arms k^3 extending therefrom, to which a section L of the road is pivoted. The pivotal point is preferably beyond the center of gravity of the section, giving the same a rearward tilt. The section is provided with abutments l , adapted to take against the arms k^3 and serving as a stop to limit the distance which the rear end of the section may sink. The section is also provided at a suitable point with guides l' , sliding on rods l^2 and adapted to guide the section into alignment with the sidings. The rods may be attached to the ceiling and be braced by a cross-bar l^3 . Normally the section L is in line with the siding of the incoming track, the traveler being held in position by a stop M . This stop preferably has the form of or is attached to a lever m , pivoted to a projection m' , attached to the upright k , and is provided with a pin m^2 , taking against the upright and limiting its forward movement. A spring m^3 tends to hold the stop in its normal position. If it is desired to place a parcel into the car, the outer end of the bent lever is depressed by means of a pull m^4 , thereby throwing the stop away from the traveler and allowing the same to slide down the upright until it reaches a pin

k^4 and is within convenient reach of the operator. The traveler is then raised by drawing on a cord k^5 , secured to the traveler, and taking over a pulley k^6 in a bracket k^7 , attached to the upright. The face of the stop M is preferably beveled, as shown at m^5 , to allow the traveler to pass unobstructed in its ascent, the traveler forcing the stop aside, which in turn is returned to its normal position by means of the spring m^3 . The outer end of the elevator track-section is provided with a catch l^4 , adapted when the section is raised sufficiently high to be on a level with the siding A' to hold the outer end thereof in line therewith, a further raising of the traveler elevating the rear end of the section and inclining it toward the siding, thereby starting the car on its travel. A stop l^6 on the rear end of the section and taking against the arm k^3 limits the forward tilt of the section and holds the same in position during the passage of the car from the section to the siding. A pin k^{16} on the upright limits the ascent of the traveler and acts, in conjunction with the catch l^4 and the stop l^6 , to give the section its proper tilt and necessary firmness during the passage of the car therefrom. When the car has left the section and the cord is released, the section will return to its normal position in line with the siding on the incoming road to receive the car on its return, the traveler resting on the stop M. Lugs l^5 , attached to the end of the siding B', are adapted to retain the outer end of the section in position and prevent the same from sinking when the car passes onto the same. When the stop M is tripped out of line with the traveler, the rear end of the section will sink until the abutments l rest on the arms k^3 , the car passing down the incline thus formed to the rear end of the section. When the abutments l strike the arms k^3 , the outer end of the section will have been thrown inwardly far enough to freely pass the lugs l^5 . A counter-weight k^8 is provided to allow the traveler and section L to automatically descend without jar from the siding A' to the siding B'. The counter-weight is hung by means of a pulley k^9 on a cord k^{10} , one end of which may be attached to the ceiling, as at k^{11} , the other to the traveler at k^{12} , the cord intermediately passing over a pulley k^{13} in a bracket k^{14} , which is bent to one side to allow the weight to pass the traveler. A buffer k^{15} , attached to the traveler, is adapted to receive the impact of the car. When the car leaves section L, it passes down the siding A' to the main road, the projections on the car passing out of the grooves in the guide-rails of the siding and taking into those in the main road. The guide-rail of the main road is discontinued between the guide-rails of the sidings, as shown in Figs. 2 and 3, to allow the cars to pass to and from the sidings.

65 The grips on the cars preferably extend below the level of the tracks, and it is therefore desirable to make provision whereby they

may pass tracks lying in their path. One of the points where it is desirable to make such provision is in the track of the main road nearest to and between the tracks of the siding. I accomplish my object by cutting away a portion of the main track and spanning the space so created by a swinging plate c' , pivoted to the main track at c^3 and forming part thereof. The plate is normally in line with the track and is held in position by a spring c^3 , attached to the track and taking against a pin c^4 on the swinging plate. When the grip on the car strikes this plate, it will swing on its pivot away from the grip and allow the same to pass, the spring returning the plate to position. The ends of the track thus cut are connected by a bracket c^5 , secured in any suitable manner. The track of the siding spanning the space between the main tracks is also provided with a similar swinging plate c^6 , pivoted on a pin c^7 . The disjointed ends of the track may be connected by a bracket. This plate is normally out of line with the track, allowing the grips on the cars from the various stations to pass unobstructed. It is held in position by a spring c^8 , secured to a stationary part of the track and having at its free end a slot c^9 , into which a pin c^{10} on the swinging plate is adapted to take. The wheels of the car passing from the siding of which the plate forms a part will force the plate into line with the track of the siding, the spring returning it to its normal position when the car has passed.

When a car passes from a siding to the main track, the end of the lever-arm h will be depressed by the trip I, opening the clamping-jaws of the grip, which, when the lever-arm has passed the trip, closes over the cable. The car then passes along the main track to the terminal station, where it is released from the cable by the trip I². The momentum of the car carries it to the end of the terminal station, where it abuts against a buffer n on the standard N at the end of the road. The car in passing into the terminal station depresses a catch a , adapted to prevent the car rebounding from the station. One of the guide-rails of road A is preferably discontinued at the terminal station, and the track on the same side of the road is preferably provided with depressions c^{11} , leaving a support at only one side of the car and causing a tilting thereof onto inclined ways O O', provided with rolls o . The car will pass down these ways within convenient reach of the wrapper or cashier. Guides $o' o'$ are provided to direct the cars in their passage down the incline. The inclined way O', on which the front end of the car travels, preferably extends to within a short distance of the bottom and beyond the center of gravity of the car. The inclined way O for the rear end of the car extends, preferably, to the line of the wheels on the tilting side of the car, where it is broken away to allow the wheels to pass, a roller o^2 , similar to those in the inclined ways and mounted in

a bracket o^3 , supported in one of the hangers of the road, serving as a continuation thereof. The inclined ways are provided at their lower ends with an upward curve o^4 , serving as a stop for the cars.

One of the objections raised to the use of cash and package carrier systems is that the cashier or wrapper, if he feels himself free from observation, will allow the cars at the terminal station to accumulate before making change or wrapping the parcels. Another objection raised is that the operatives will, when the cars accumulate at the terminal station, attend to the car within most convenient reach, which is usually the last one to arrive, neglecting those already in the station. It thus often happens that a car remains in the station a considerable length of time. To guard against these abuses, I provide a signal at the end of the inclined way adapted to be actuated by the car when it is received and to continue in agitation as long as it remains untouched. In my signal, P is an electric bell, p a battery, and p' a contact-arm pivoted on a pin p^2 and adapted to take against a contact-plate p^3 . The contact-arm may be normally held out of engagement with the contact-plate by means of a spring p^4 or by weighting the end of the contact-arm. A stop p^5 is provided to limit the throw of the contact-arm. When a car arrives at the bottom of the inclined way, it depresses the contact-arm into engagement with the contact-plate, forming an electric circuit and actuating a bell, which may be placed at any suitable point. By means of this arrangement the employer or proper person may know when the wrapper or cashier is neglecting his duty or not attending to the cars in proper rotation. When the car has been removed from the inclined ways and the packages wrapped or change made and returned to the car, the car is placed on the road B, one or both guide-rails of which at the terminal station are discontinued to allow the car to be readily placed in position. The gripping-jaws are closed about the cable and the car sent on its return to the proper way-station.

When a car arrives at its predetermined way-station, the contact-piece d^5 will take against and operate a switch-lever Q and close a switch R, thereby directing the car to the siding. The grip in passing the main track throws aside a swinging plate c^{12} , similar in construction to plate c^{11} .

The switch-lever Q is preferably provided at its end with a contact-plate q , against which the contact-piece d^5 on the car is adapted to take. It may be pivoted at q' to a bracket e' , secured to the guide-rail E, and is pivotally attached at its lower end to a rod q^2 , connecting with the switch R, which is preferably pivoted at r to a plate r' , which may be secured to the main rail. A spring r^2 is provided for returning the switch-lever to its normal position. The trip I' is adapted to open the grip and release the car from the

cable. The car will be carried by its momentum onto the section L and abut against a buffer k^{15} . A catch a' is provided to retain the car on the section.

I claim—

1. The combination, in a package and cash carrier apparatus, of a pair of tracks, a guide-rail, a station, an opening in the guide-rail at the station, a second opening in one of the tracks, a car traveling on the tracks, guided by the rails and adapted to tilt at the station, an inclined way at the station taking under one end of the car beyond the line of wheels on the tilting side thereof, a second inclined way for the other end of the car, broken away to allow the wheels on the tilting side thereof to pass, and a bracket between the tracks, forming a continuation of the second inclined way, constructed and arranged substantially as and for the purpose specified.

2. The combination, in a package and cash carrier apparatus, of a pair of tracks, a guide-rail, a station, an opening in the guide-rail at the station, a second opening in one of the tracks, a car traveling on the tracks, guided by the rail and adapted to tilt at the station, an inclined way at the station taking under one end of the car beyond the line of wheels on the tilting side thereof, a second inclined way for the other end of the car, broken away to allow the wheels on the tilting side thereof to pass, a bracket between the tracks, forming a continuation of the second inclined way, and rolls in the inclined ways, constructed and arranged substantially as and for the purpose specified.

3. The combination, in a package and cash carrier apparatus, of a pair of tracks, a guide-rail, a station, an opening in the guide-rail at the station, a second opening in one of the tracks, a car traveling on the tracks, guided by the rail and adapted to tilt at the station, an inclined way at the station taking under one end of the car beyond the line of wheels on the tilting side thereof, a second inclined way for the other end of the car, broken away to allow the wheels on the tilting side thereof to pass, a standard between the tracks, forming a continuation of the second inclined way, and guides adapted to direct the car in its descent on the inclined way, constructed and arranged substantially as and for the purpose specified.

4. The combination, in a package and cash carrier apparatus, of the tracks C C, the guide-rails E E, parallel therewith, a station on the line of tracks, an opening in one of the guide-rails E at such station, the depressions c^{11} c^{11} in one of the tracks, the car D, and inclined ways adapted to take under the car, substantially as and for the purpose specified.

5. The combination, in a package and cash carrier apparatus, of the tracks C C, the guide-rails E E, parallel therewith, a station on the line of tracks, an opening in one of the guide-rails at such station, a second opening in the track on the same side of the road, a car trav-

eling on the tracks, the inclined ways $O O'$, the rolls o , the bracket o^3 , and the roller o^2 , mounted thereon, substantially as and for the purpose specified.

5 6. The combination, in a package and cash carrier apparatus, of a line of track, a car traveling thereon, the inclined ways $O O'$, extending from the line of track, the signal P , the battery p , connecting therewith, the contact-plate
10 p^3 , and the contact-arm p' , adapted to be depressed by the car, thereby forming a connection through the battery and operating the signal, substantially as and for the purpose specified.

7. The combination, in a package and cash 15 carrier apparatus, of the lever-arm h , attached to the car, the pair of levers $h^2 h^3$, the projection h^4 , to which the levers are pivoted, the gripping-jaws h^5 , adapted to clamp the cable, the lugs h^6 , the slots h^7 , in which the lugs are 20 adapted to slide, and the spring h^8 , adapted normally to close the gripping-jaws, substantially as and for the purpose specified.

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Witnesses:

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