

No. 685,740.

Patented Nov. 5, 1901.

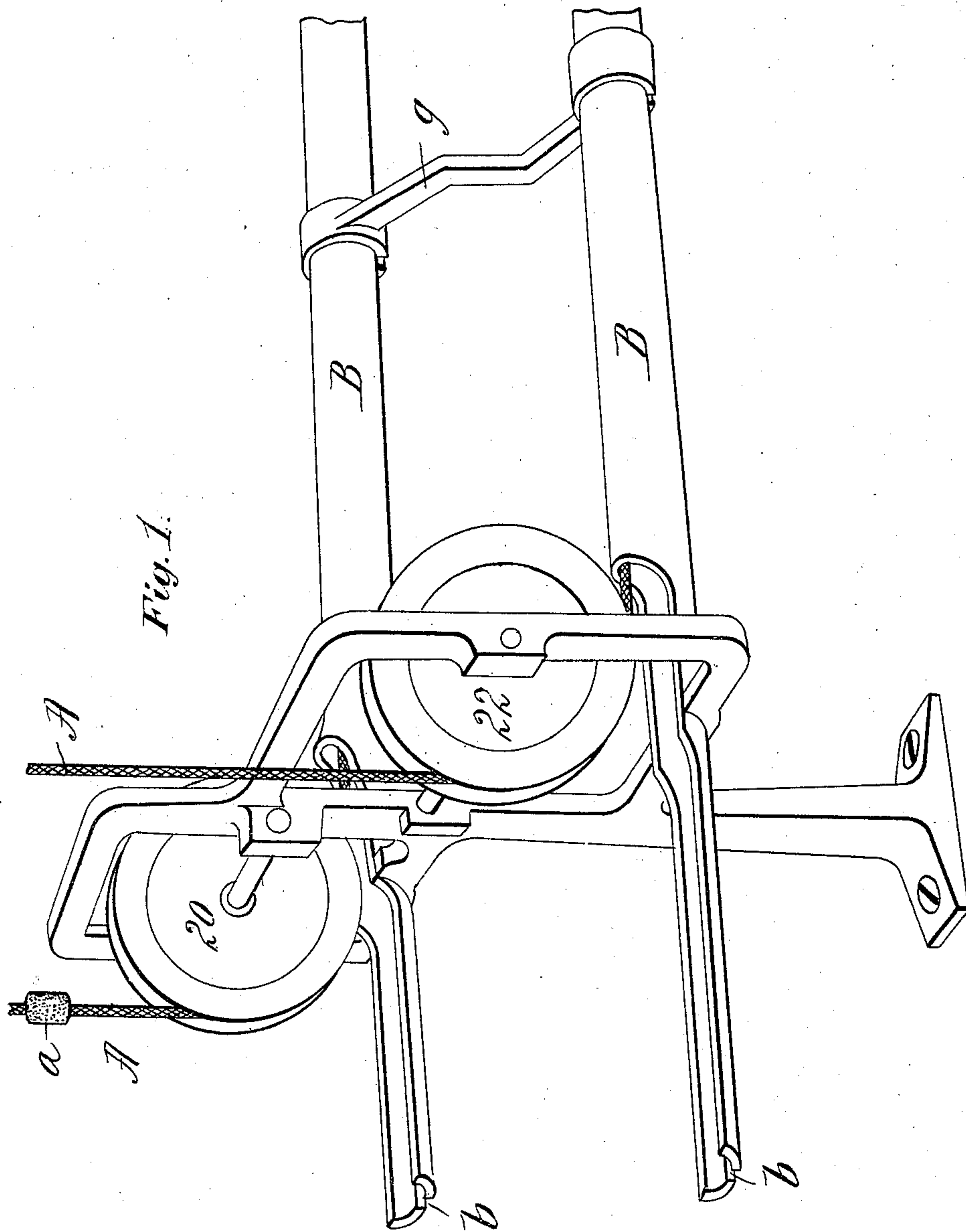
J. H. D. CHAMBERLAIN, D. E. CHISM & L. A. COOPER.

CASH CARRIER APPARATUS.

(Application filed Feb. 16, 1901.)

(No Model.)

5 Sheets—Sheet 1.



Witnesses:

M. A. Campbell
C. F. Clarke

Inventors:

J. H. D. Chamberlain
D. E. Chism
L. A. Cooper
by W. F. Bellows
their Attorney.

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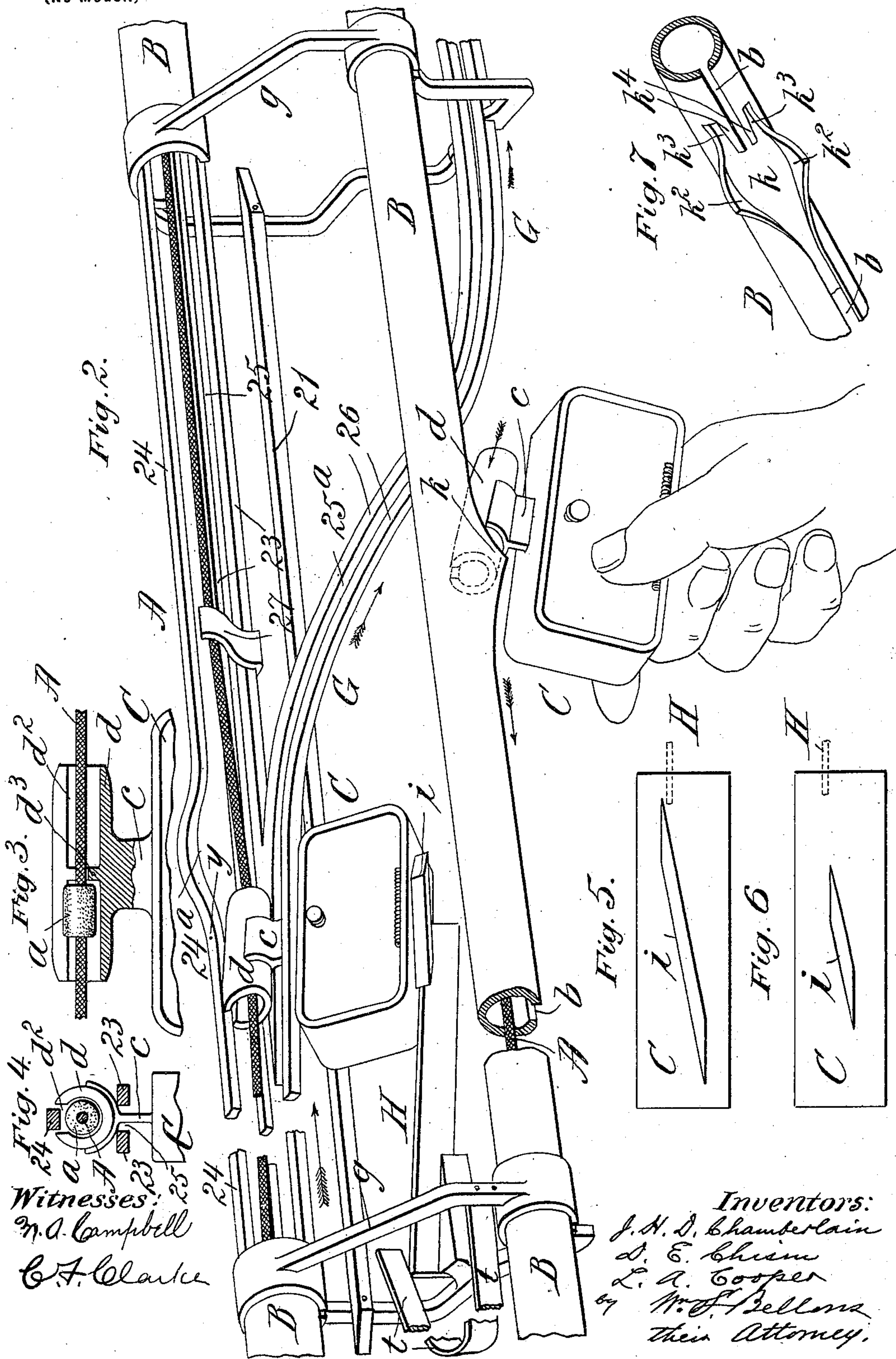
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5 Sheets—Sheet 2.



Witnesses:
M. A. Campbell
C. F. Clarke

Inventors:
J. H. D. Chamberlain
D. E. Chism
L. A. Cooper
by M. F. Bellows
their Attorney.

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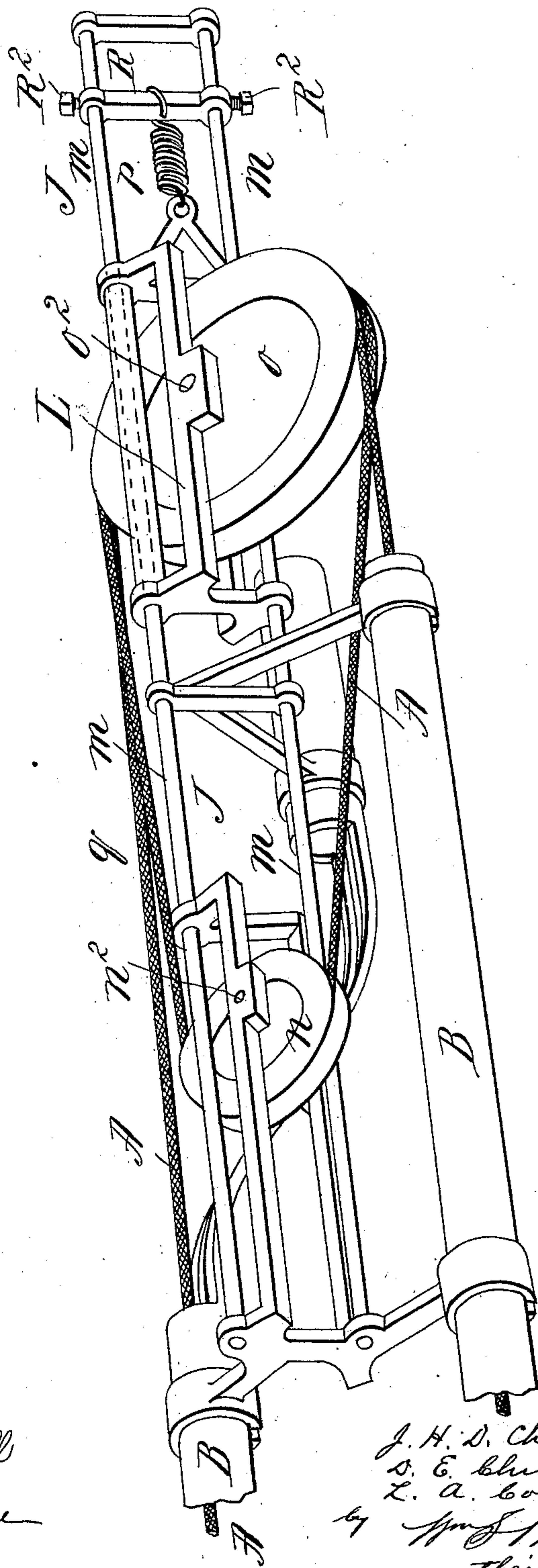
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5 Sheets—Sheet 3.

Fig. 8.



Witnesses:

M. A. Campbell
C. F. Clarke

Inventors:

J. H. D. Chamberlain,
D. E. Chism
L. A. Cooper
by *Wm. J. Bellows,*
their Attorney.

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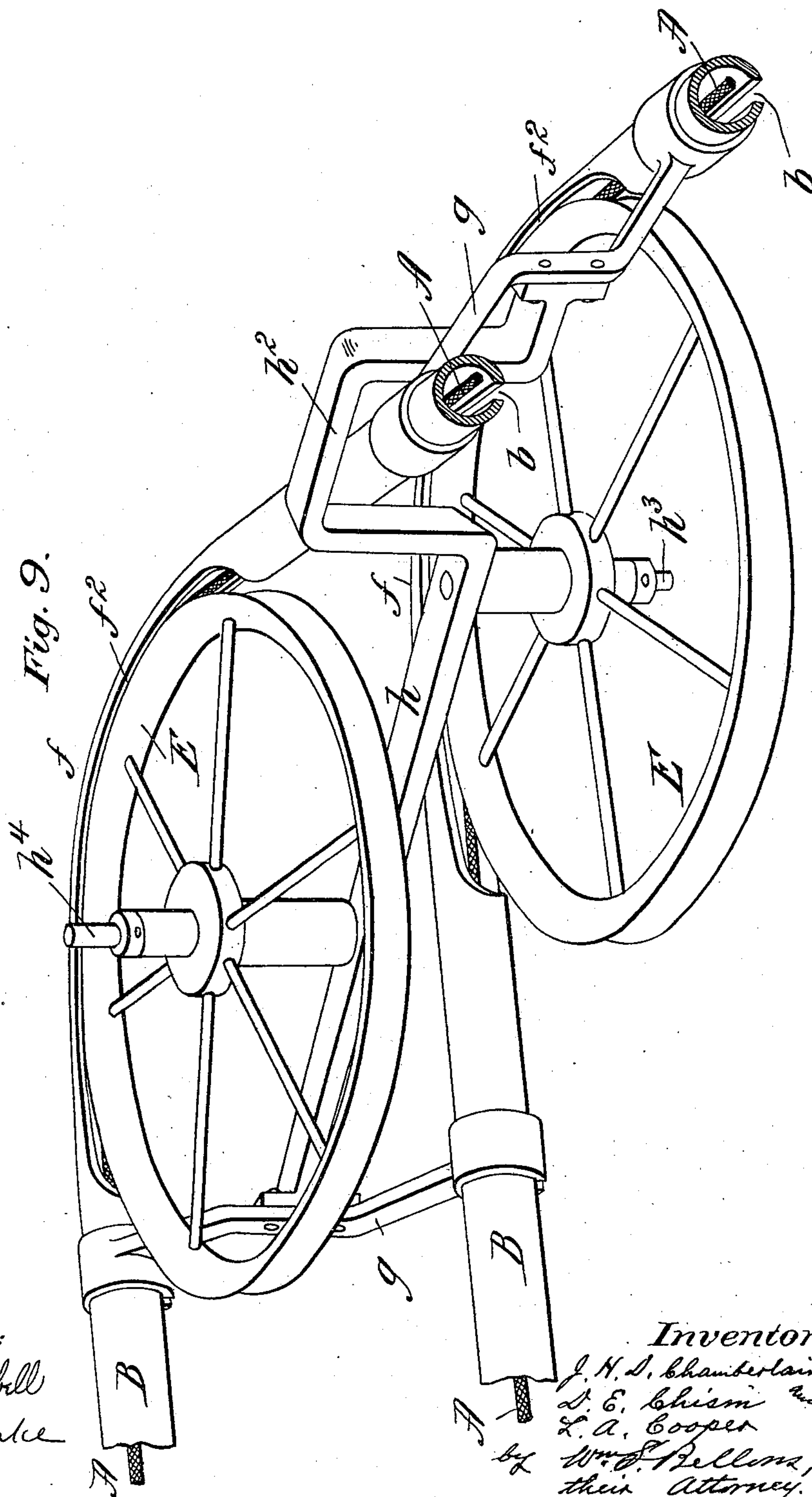
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CASH CARRIER APPARATUS.

(Application filed Feb. 16, 1901.)

(No Model.)

5 Sheets—Sheet 4.



Witnesses:

M. A. Campbell
B. F. Clarke

Inventors:

J. H. D. Chamberlain,
D. E. Chism and
L. A. Cooper
by Wm. F. Bellon,
their Attorney.

No. 685,740.

Patented Nov. 5, 1901.

J. H. D. CHAMBERLAIN, D. E. CHISM & L. A. COOPER.

CASH CARRIER APPARATUS.

(Application filed Feb. 16, 1901.)

(No Model.)

5 Sheets—Sheet 5.

Fig. 10.

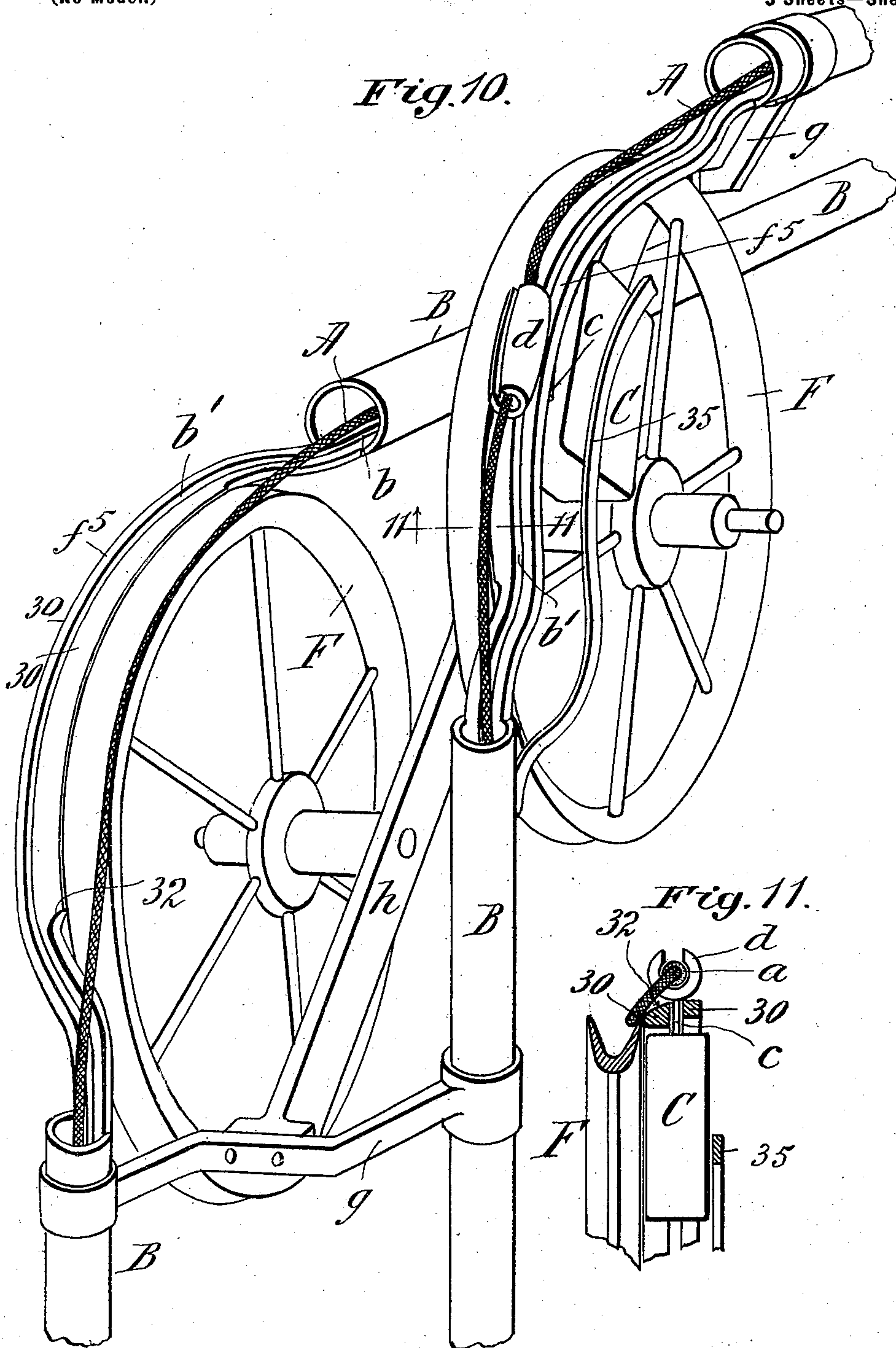
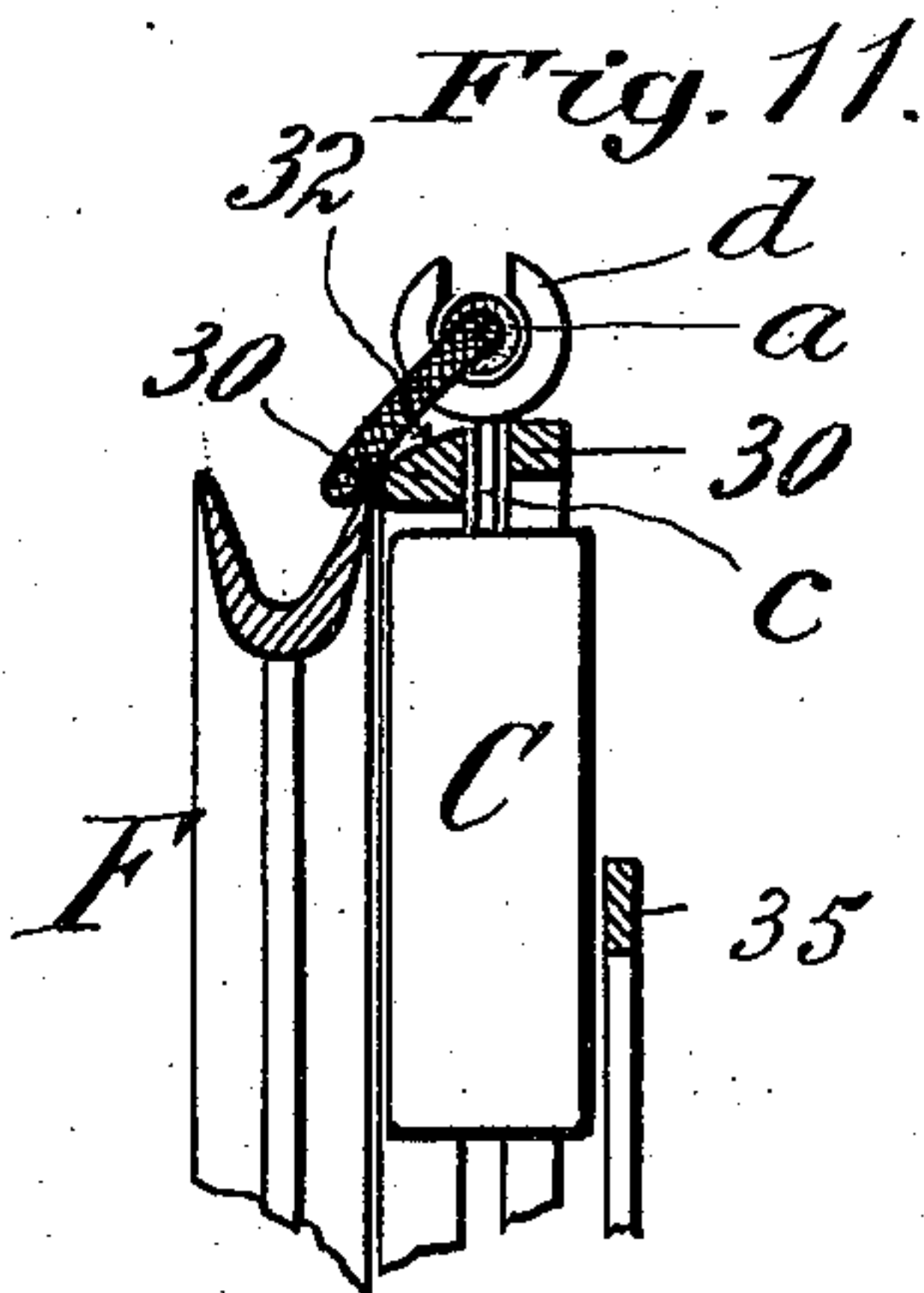


Fig. 11.



Witnesses:
M. A. Campbell
C. F. Clarke

Inventors:
J. H. D. Chamberlain, D. E. Chism
and L. A. Cooper
by W. J. Bellows, Attorney.

UNITED STATES PATENT OFFICE.

JAMES H. D. CHAMBERLAIN, OF SPRINGFIELD, MASSACHUSETTS, DAVID E. CHISM, OF STAFFORD SPRINGS, CONNECTICUT, AND LESLIE A. COOPER, OF SPRINGFIELD, MASSACHUSETTS.

CASH-CARRIER APPARATUS.

SPECIFICATION forming part of Letters Patent No. 685,740, dated November 5, 1901.

Application filed February 16, 1901. Serial No. 47,562. (No model.)

To all whom it may concern:

Be it known that we, JAMES H. D. CHAMBERLAIN, of Springfield, in the county of Hampden and State of Massachusetts, DAVID E. CHISM, of Stafford Springs, in the county of Tolland and State of Connecticut, and LESLIE A. COOPER, of Springfield, in the county of Hampden and State of Massachusetts, citizens of the United States of America, have invented certain new and useful Improvements in Cash-Carrier Apparatus, of which the following is a full, clear, and exact description.

This invention relates to improvements in cash-carrier apparatus of the class comprising an endless carrier-cord, understood as running from and returning to the suitably-driven pulley for the propulsion thereof; trackways through or along which the outgoing and returning courses of the carrier cord or cable run; suitable intermediate pulleys or sheaves for the proper support and guidance of the cord, both at turns or corners and also in cases where the trackway is straight and continuous for a long distance, and comprising station-turnouts, in conjunction with switching means whereby the cash box or receptacle engaged by buttons or enlargements of the cord to be carried along thereby is duly caused to leave the main trackway at the given station to which a given cash box or receptacle corresponds.

The present invention principally relates to improved arrangements and appliances comprising the double trackway along which run the outgoing and returning courses of the carrier-cord and the sheaves or pulleys having peculiar arrangements to each other and to the bends of the trackway for the purpose of facilitating the passage of the carriers or boxes around the corners without distortion of the track, and to greatly simplify corner constructions and to render the parts practically interchangeable, so that the appliances as more or less uniformly made may be applicable in a great variety of situations in a store where the cash-carrier system is installed.

Another object of the invention is to devise constructions and arrangements of the appli-

ances for "plumb" corners, (which in this art are understood as those wherein the carrier-cord has its course from a vertical line to one horizontal or otherwise angular thereto,) so that there may be a retention of the cable contact upon the pulley in the corner, whereby there is a much-lessened degree of friction than in plumb corners in old cash-carrier constructions, wherein are necessitated the twisting of the track or the entire withdrawal of the cable from the wheel in order to effect the passage of the box between the cable and the wheel.

In attaining the object of the present invention the retention of the cable within the peripheral groove of the wheel is effected by the provision in and as a part of the appliances of a curved apron or guard adjacent the portion of the rim of the pulley, which serves the double purpose of constituting one member of the track for the guidance of the carrier and of constituting the cord-retainer and serving as the carrier comes to this portion of the carrier system in which the improved plumb-corner arrangement is embodied to so guide the box through a course which is offset from the plane of the pulley that the box or carrier may freely pass the latter without obstruction thereby and yet without being swung angularly from its ordinary running position. It may be added that substantially this plumb-corner construction is applicable for use in any corner where the box in its ordinary running course would collide with the pulley.

Another object of the invention is to provide an improved take-up for the cable at a place in the system or apparatus the farther from the home-station or cable-propulsive motor, which has for its advantages compactness or condensation, simplification of parts, an increase in its scope of take-up action, and general efficiency.

Another object of the invention is to provide improvements in the appliances for the station at which the box is diverted from the main trackway, contemplating the employment of a divergent opening in the trackway, suitably adjacent, which is a switch or deflector to cooperate with a suitable lip member

or part on the box by which the latter is diverted and guided from the main trackway onto the branch or station, and at the stations provisions are made for the disengagement of the cable and carrier, whereby the same must positively remain in connection until the proper instant for their disconnection and thereupon whereby there may be no impediment to the latter at the instant such action is to occur.

Another object of the invention is to provide ready means of supplementing the scope of plants of this apparatus without necessitating the whole expense of installing an entire new line between the home station and the additional new stations, which are situated off from and more or less remote from the lines already installed.

Another object of the invention is to provide in a very simple manner for the passages of numerous boxes or carriers past many stations, the same to be switched from the main trackway only at that station to which it belongs.

The invention consists in combinations and arrangements of parts and in construction or forms of some of the parts, all substantially as hereinafter fully described, and covered in the appended claims.

Reference is to be had to the accompanying drawings, in which our improvements in and for the cash-carrier system are illustrated, and in which—

Figure 1 represents the terminal or home station. Fig. 2 represents what may be regarded as a right-hand end continuation of Fig. 1, comprising the station and showing the manner of the box on the outgoing track being switched or side-tracked at the station and showing the manner of sending in a box corresponding to the same station for transmission again to the home station. Fig. 3 is substantially a longitudinal vertical sectional view through the head of one of the boxes or carriers, showing the same as engaged by the button or shoulder of the running-cable. Fig. 4 is an end elevation of the same, portions of the three-ply trackway, the same as constructed and provided at a switching-station, being shown in relation to the cash-box head in cross-section. Figs. 5 and 6 are plan views of the bottoms of cash-boxes, showing the difference in the switching lips or lugs of boxes to be thrown out at different stations. Fig. 7 is a perspective view of a part of the tubular portion of the trackway, showing its formation for the insertion therewithin to engage the therein-running cable of the cylindrical head of the cash-box. Fig. 8 is a perspective view of the terminal of the apparatus or system, comprising the take-up appliances for the endless carrier-cable. Fig. 9 is a perspective view representing the novel arrangement of the trackway and sheaves or pulleys for a horizontal corner or corner otherwise than horizontal which is not strictly a vertical or plumb corner. Fig. 10 is a perspective view

showing arrangements having novel characteristics which are in common with those of the corner construction shown in Fig. 9 and which, moreover, comprise further novelties especially available for vertical corner constructions. Fig. 11 is a sectional and partial plan view as seen looking downwardly from about the horizontal intersecting plane indicated by the line 11 11, Fig. 10.

The appliances of Sheets 1, 2, and 3 may be understood as constituting continuations one of another in a complete cash-carrying apparatus, and the appliances in Sheets 4 and 5 may be comprised in intermediate parts of the apparatus as occasion for changes in the course of the trackway for horizontal or plumb corners may require.

Similar characters of reference indicate corresponding parts in all of the views.

In the drawings, Fig. 1, the terminal station is represented, the carrier-cable A being understood as being endless and having a turn about a suitable positively-driven propulsion drum or pulley, (not shown,) as common in the general class of cash-carrier apparatuses to which the present invention appertains. The cord has at suitably-frequent intervals the enlargements or buttons *a*, which may be of felt, elastic rubber, or other suitable material which is preferably compressible in a considerable degree.

B B represent the two trackways, which preferably for and throughout the greater portion of the length of the apparatus are in the form of a tube, with a slot *b* along its bottom for the unobstructed passage there-through of the neck *c*, which is intermediate between the cash-box proper, C, and the head or enlargement *d* therefor.

The carrier-cord A has the outgoing and return courses thereof passed around the peripherally-grooved sheaves 20 and 22, the planes of rotation of which are parallel, although they are arranged, as would be seen in edge view, with their centers coincident with a line which is oblique to their axes, and the trackways B B are correspondingly and relatively in an oblique line as to their transverse aspect, although the trackways range throughout the length of the entire apparatus substantially in parallelism, with exceptions thereto or departures therefrom, as hereinafter pointed out, and the said trackways have their lengths substantially tangential to the said sheaves 20 22 and to the sheaves or wheels E E and F F at bends or corners, as indicated in Figs. 9 and 10.

With reference to Fig. 9, wherein a construction for what is termed a "horizontal corner" is illustrated, it will be seen that the one (lower) trackway is longitudinally extended to the rightward a short distance farther than the other (upper) trackway before having the quadrantal bend at *f* to round the grooved wheel or sheave, and the positions of the two wheels E E, the axes of which are parallel and which accordingly rotate in par-

allel planes, are, as viewed edgewise or transversely of the lengths of the two trackways and as regarded relatively to the plane of rotation of the wheels, in an oblique arrangement, the trackways having conformably thereto the same arrangement. In practice the arrangement of the cross-sections of the trackways and of the centers of the wheels at an inclination of about forty-five degrees to the planes of rotations of the wheels is regarded as the best and most practical and available one; but we do not desire to be confined necessarily to exactly this angle. Oblique braces g serve as stays and tie members for the tracks, and where the tracks have portions of their lengths angular to each other—as seen, for instance, in Fig. 9—for the making of a corner turn, so that the one tie-brace g has its position more or less nearly at right angles to the other, there is extended from the one brace to the other and supported thereby the diagonal wheel-supports, shown as in the form of a suitably-rigid metallic bar h , arched at one place, as indicated at h^2 , to leave unobstructed space for occupancy of the one trackway, which is tangential to the one corner-wheel E , which, for instance, Fig. 9, is supported at the upper side of this diagonal bar, and to leave an unobstructed space below the groove of the track for the passage of the cash-box, which may be carried along said track and depend therebelow toward but not so far as to contact with the other wheel E , the supporting stud or shaft h^3 is extended, dependent upon the opposite side of the said wheel-support bar h , from which the other stud h^4 for the upper wheel rises.

The rims of the wheels or sheaves E are rather deeply peripherally grooved, and the bent portions f of the trackway-tubes are sidewise cut away or recessed, as indicated at f^2 , so that practically a tubular way having a median bottom slot or opening for the passage of the neck of the cash-box is retained, although instead of being entirely produced by the construction of the tube is in part produced by the tube and in part by the rim of the wheel. The cable is thus permitted to be in running contact on the rim of each wheel at all times except at such time as the head of a cash-box is brought along to the wheel, whereupon the head of course crowds the portion of the cable out of contact with the wheel of the rim, but without disengagement of any material portion of the length of the cable from within the groove in such wheel.

The cylindrical or otherwise formed head of the cash-box supported above the thin neck has a central upwardly-opening longitudinally continuous opening d^2 for the accommodation therewithin of the cable A and of the cable-button a , and within said opening is the U-shaped lug or shoulder d^3 , with which some one of the cable-buttons engages when the head is introduced into the tube,

with the trough of the head embracing the cord.

Where the trackway is to have combined therewith parts and provisions for an intermediate switching-station, as illustrated at G in Fig. 2 of the drawings, the tubular form of trackway at which the switching-station is to be provided may be departed from and the trackway for a comparatively short stretch constituted by the two parallel separated lower rods or runners 23 23 and the upper rod 24, having its location above the slot or opening 25 between the said rods 23 23.

Diverging from the slotway 25 forwardly and laterally in the direction of the arrows, Fig. 2, is the branch slotway 25^a, as formed between the inner edges of the two runners or rods 26 26. Adjacent and below the point where the branch or station track, in which is the way 25^a, merges into the straightway portion of the track is the switching plate or tongue H , standing vertically and having a forwardly-divergent relation to the main course of the track.

It will be perceived that the carrier or cash box C has provided at and depending below its lower edge the diagonal lip or lug i , the arrangement and location of which on the box for a given station is to be relatively and corresponding to the aforementioned switching-plate H for coöperative action therewith, so that the particular box or boxes for any given station in the apparatus will be thrown out at such station, while all others not belonging or corresponding to this station will pass thereby and proceed to the station to which it belongs before being switched out thereat. When the cash-box emerges from the tube and comes upon the runner-rod continuation of the broken or discontinued tube, the upper rod 24 serves as a guard or runner at the mouth of the trough-opening d^2 of the cash-box head and tends to restrain the button in its engaging position, the cash-box still retaining its substantially vertical position; but as the cash-carrier in proceeding is crowded by the switching-plate to take the divergent way to the station G the upper runner-rod serves as a fulcrum on which the carrier bodily swings transversely, the slotway or opening at 25 being wider than the thickness of the neck of the cash-carrier, as indicated in Fig. 2. The cord is in the action of the switching more or less strained and distorted from its usual course, and as the neck of the box comes fairly well into the station-trackway and reaches the downwardly and laterally inclined portion thereof the cord is free to become separated from its engagement with the trough-shaped and lug-provided cash-box head and the head escapes the engagement of rod 24 by reason of the rise or arched formation seen at 24^a in the rod 24.

While, as shown in Fig. 2, the rod 24 is extended from one tube-section B to another and has the rise or break in its longitudinal continuity, which is done for purposes of sim-

plicity and rigidity of construction, the purposes of the present invention would be practically served if, for instance, the rod 24 were terminated at about the point y and the portion of such rod to the rightward thereof being omitted, and as the head of the cash-box begins to follow a downward as well as the divergent course and in order that the cable may not for any reason of its manner of engagement by its button with the head of the cash-box be constrained to be downwardly drawn considerably out of its straight course the cable-stop 27 is provided in the form of a compound curve or practically step-shaped lug rising above one of the lower runner-rods 23.

The diagonal ribs i for boxes for different stations may be of varying lengths and of consequently varied transverse extents, so that, for instance, the cash-box having a comparatively short rib on coming to a switching-plate having its initial end portion located at a given proximity to the line of travel of the box will escape and freely pass such switch-plate, while the cash-box having its rib properly longer to correspond to and cooperate with the given switch-plate will be engaged by the latter and switched onto the station-trackway.

The flat spring at t , Fig. 2, is useful at a switching-station to insure that carriers which are not to be switched to the branch way will be with certainty forced to continue in the straight trackway. The longitudinal guard-rod 21 prevents the spring t from forcing the straight-running box sidewise to such an extent that it would not freely enter the slotway of the tubular trackway beyond the station.

The general plan and provisions of the switching-plates and the cash-boxes having the switching tongues or lips enable with comparatively slight changes in the formations of the lips or of the location of the switching-plates or of both in the cash-carrying apparatus having many stations the appropriate switching of a multiplicity of cash-boxes at exactly those stations to which the individual boxes belong.

Mutations for the plurality of stations may be provided for in order to effect the timely switching of the respective cash boxes or carriers by, first, changing the lengths of the diagonal projections i ; secondly, by changing the depths thereof; thirdly, by changing the lengths of the switching-plates H , so that the initial ends thereof have varying proximities to the track-line, or, what amounts to very much the same, to changing their positions bodily, so that the switching-plates are nearer or farther from the line of the trackway, as required, and, fourthly, by changing the height of the switching-plate or of some portion of the length thereof.

Cash-carrier apparatuses comprising switching-stations substantially such as described may have the trackways extended in continu-

ation of the branches beyond the stations with additional propulsion-cables therefor, as described for the main line of the system, and the extended branch may have substations with switching appliances for the respective carriers provided thereat, and such an arrangement would obviate the necessity, as heretofore practiced, of having all of the lines emanating from the home station or cashier's desk, whereat separately-provided propulsion-wheels with driving means therefor have been necessitated.

Referring to Fig. 5, it will be seen that the oblique switching lip or lug i , provided at the bottom of the cash-box, is of a symmetrical and central form, so that it is immaterial which end of the box comes foremost, and it will also be perceived on reference to Fig. 3 that the head of the cash-box is substantially alike at either side of the engagement-lugs d^3 , so that the cash-box head may be brought into engagement with the button-provided cable irrespective of whether one end or the other of the head is introduced into the tubular trackway, the manner of which introduction is seen in Fig. 2. In cases where the cable-buttons a are made of inelastic or non-compressible material they would be diametrically less than the mouth of the opening d^2 in the carrier-head d , and for the introduction of the head of the cash-box at a station for a return or transmission of the box in a direction opposite to that pursued by the box in coming to the station the tubular trackway is, as shown in Fig. 7, constructed with the opening k , having the opposite guiding-lips k^2 formed by downwardly-deflected portions of the tubing at either side of the slotway b . The lower portion of the tube is incised or slotted, as indicated at k^3 , at the rearward portion of the opening k and laterally at opposite sides of the slotway b , leaving the forwardly-projecting members k^4 all so that the cylindrical cash-box head may be introduced to within the tubular trackway by being tilted in the manner indicated in Fig. 2 and yet so that a forwardly-traveling cash-box coming from the rear to and past the opening, having its head in axial alignment within the track, will bridge the space between said tread extensions k^3 and the points where the downwardly-deflected lips k^2 converge to join or merge into the edges of the said slot b .

At the end of the apparatus the farther from the home station the take-up devices for the cable are provided, the same being illustrated in Fig. 8, in which J represents a suitably-supported stationary frame comprising the parallel longitudinal rods $m m$. The small sheave n is mounted for rotation in stationary journals at n^2 . The larger sheave o (between which and the intermediate part of the apparatus the said sheave n is located) is journaled at o^2 in the yoke or frame L , which is fitted to slide along the rods $m m$. This larger sheave is so located

that opposite portions of its periphery are in tangential relations to the terminal portions of the trackways and to the parallel courses of the cable which run therealong, so that the cable in emerging or passing from and beyond the trackway may have the encircling engagement about the said sheave *o* without the necessity for its proper guidance thereto of additional guide-rolls, which latter would be required to prevent the cable impinging against the ends of the trackway were the relations of the peripheral portions of the sheave to the lines of the trackway and cable otherwise than as stated. The spring *p* exerts a draft on the yoke-carried sheave. Two courses or portions of the cable encircle the large sheave, running out from one and back within another of the trackways, and to other sections or portions of the cable comprising the bight *q* extend from a half-encircling turn around the large sheave to a half-encircling turn around the other sheave *n*. Should the take-up movement be insufficient, the tension may be adjusted by loosening the screws *R*², moving the adjustable part *R* along the rods *m m*, and resetting the screws.

In Figs. 10 and 11 an extension or modification of the horizontal corner construction shown in Fig. 9 is illustrated to adapt the appliances for the making of a plumb or vertical corner, so that the cash carrier or box in passing around this corner in either direction may do so, still retaining its position in a vertical plane. Therefore in order that the carrier may thus pass around the corner and yet not be obstructed by the wheel or sheave *F* the quadrantally-bent portion of the trackway (indicated at *f*⁵ and consisting of the two runner rod-like members 30 30, with the slotway *b'* between them, which is in continuation of the slot *b* of the trackway-tubes *B B*) is offset laterally, so as to have its position in curved course near but off to the side of one edge of the rim of the wheel. The one of these members 30 which is next to the rib of the rim of the wheel has its face inclined, as indicated at 32, and in a manner forms an apron or guide for the cable even when the same is to some extent sidewise distorted, as indicated in Fig. 10, by the laterally-offset course of the carrier, the head of which is in engagement with the cable in the rounding of the corner. The cash-box as here seen as having a position offset from and yet quite closely next to and parallel with the plane of the wheel, and although the portion of the cord at which the cash-box head has its engagement is forced out of contact or peripheral bearing on the wheel, a portion or portions forward of or behind such head or portions both forward and behind such head will be in running engagement on the wheel-periphery, and the inclined formation (indicated at 32) for the face of the runner member proximate to the wheel-rim facilitates the operation of the apparatus. In order that the cash-box may not swing unduly outwardly away

from the plane of the wheel *F* in making the turn, a guard-rod 35 may be provided having the general arrangement concentrically to the wheel, the same being indicated cross-sectionally in Fig. 11.

It is not essential that some portions of the trackway be made in the form of slotted tubes and that other portions thereof—for instance, as shown at the station, Figs. 2 and 4—be in the form of triple longitudinally-ranging rods.

The long stretches of trackway between stations might be constituted by the triple rods instead of the tubes, and, again, the tubular formations might be continued at the stations; but it will be pointed out that for the best coöperative actions between trackway, button-provided cable, and carrier having upstanding neck surrounded by the head having a longitudinal trough or cavity for the accommodation of the cord and button and having the stop with which the button engages it is far best to have a trackway comprising, as is done both in and by the slotted tube and the triple rods, two lower tread portions or runner members separated by the opening for the carrier-neck and suitably above the slot or opening a portion for holding the button down to its place of engagement with the shoulder or abutment *d*³, and the tube *B* may be continued even at the station, the same having properly in relation to the downwardly-inclined branch trackway to correspond to the opening as constituted by the rise 24^a, Fig. 2, an aperture or an upward bend in its top wall to permit seasonably the separation of the button from within the opening in and along the top of the carrier-head *d*. It is, however, advantageous to employ the slotted tubular form of trackway throughout material portions of the length of the apparatus, as the same is less liable to distortion than would be the triple rods, and it does away with the necessity of stay collars or yokes and may be more cheaply produced and is free to a large extent from deposition of friction-producing dust upon the trackways.

Having now described our invention, what we claim, and desire to secure by Letters Patent, is—

1. In a cash carrier apparatus, two trackways having bends, the place of one of which is in further longitudinal extension than the other, wheels or sheaves located in said bends, which wheels together with the trackways in the transverse aspect to the apparatus have oblique arrangements.

2. In a cash-carrier apparatus, two trackways having bends, the place of one of which is in further longitudinal extension than the other, wheels or sheaves located in said bends, which wheels together with the trackways in the transverse aspect of the apparatus have oblique arrangements in combination with a propulsion-cable having a button or shoulder and a carrier having a neck and an enlarged head, provided with a longitudinal upwardly-

opening cavity and therewithin a button-engagement abutment.

3. In a cash-carrier apparatus, two substantially parallel trackways having bends, one of which is at a place in further longitudinal extension than the other, wheels or sheaves located in said bends in parallel planes and with their rims in proximity to the trackways, and said wheels and trackways as regarded in a transverse aspect of the apparatus, having an oblique arrangement, relatively to the planes of the wheels.

4. In a cash-carrier apparatus, two substantially parallel trackways having bends, one of which is at a place in further longitudinal extension than the other, wheels or sheaves located in said bends in parallel planes and with their rims in proximity to the trackways and relatively to which rims the straight portions of the trackways are substantially tangential, and said wheels and trackways, as regarded in a transverse aspect of the apparatus having an oblique arrangement relatively to the planes of the wheels.

5. In a cash-carrier apparatus, two substantially parallel trackways having bends, one of which is at a place in further longitudinal extension than the other, wheels or sheaves located in said bends in parallel planes and with their rims in proximity to the trackways and relatively to which rims the straight portions of the trackways are substantially tangential, and said wheels and trackways as regarded in a transverse aspect of the apparatus having an oblique arrangement relatively to the planes of the wheels in combination with the propulsion-cable, having its course of travel along the trackway and at a corner having a portion thereof at all times in contact on the rims of the wheels.

6. In a cash-carrier apparatus, the combination with two tubular trackways having their courses in parallelism, and at a turn or corner one thereof being lengthwise extended beyond the other, and having at such corners their inner lateral portions omitted or cut away, two grooved wheels or sheaves at the internal corners of the respective trackways arranged in parallel planes, and said wheels and the trackways being offset, and maintaining positions relatively to each other as regarded in their transverse aspects oblique to the planes of the wheels, and said cut-away portions conducting with the grooved wheel-rims to form substantially continuations of the tubular trackways, edges of said cut-away portions of the tracks being slightly separated from the adjacent edges of the wheels to leave the unobstructed passageway for the neck of a cash-carrier, the button-provided cable and cash-carrier having a neck, and a head constructed with a longitudinally upwardly opening cavity provided with a button-engaging abutment.

7. In a cash-carrier apparatus, two horizontally-arranged wheels and two trackways

having corner turns or bends, the main courses of which trackways are substantially tangential to the rims of the wheels, one trackway having a further longitudinal extent before it makes its wheel-encircling bend than the other, and said trackways and wheels having the oblique arrangements substantially as described, and each trackway having in the straight courses thereof vertical openings between lower tread portions thereof, for the purposes set forth.

8. In a cash-carrier apparatus, the combination with two substantially parallel trackways, and at a turn or corner one thereof being lengthwise extended beyond the other, two wheels or sheaves at the internal corners of the respective trackways arranged in parallel planes, and said wheels and the trackways being offset, and maintained in positions relatively to each other as regarded in their transverse aspects, oblique to the planes of the wheels, and a wheel-support bar extended from one trackway to the other obliquely at the corner, on which the said wheels are rotatably supported.

9. In a cash-carrier apparatus, two trackways having bends, the place of one of which is in further longitudinal extension than the other, wheels or sheaves located in said bends, which wheels together with the trackways in the transverse aspect of the apparatus have oblique arrangements, the diagonal bar h supporting the wheels at opposite sides thereof, and having the arched portion h^2 to leave an unobstructed space for one of the tracks, and for the passage therealong of a cash-carrier.

10. In a cash-carrier apparatus, two trackways having bends, the place of one of which is in further longitudinal extension than the other, wheels or sheaves located in said bends, which wheels together with the trackways in the transverse aspect of the apparatus have oblique arrangements, the tie-bars $g g$, uniting the two trackways in advance of and back of the bend, and the obliquely-arranged arched bar h supported by and extended between said tie-bars at opposite sides of which the said wheels are supported.

11. In a cash-carrier apparatus, the combination with a trackway comprising continuous separated lower tread portions with a slotway therebetween, and a continuous longitudinal portion above the slotway, and a button-provided propulsion-cable running between said portion of the trackway of a cash-carrier provided with a neck and a head having in its top a radially outwardly opening cavity extending from front to rear end of the head for the accommodation of the cable, and having a button-engaging abutment.

12. In a cash-carrier apparatus, the combination with a suitable track having a longitudinal slotway, and a propulsion-cable having buttons or shoulders, of a cash-carrier provided with a part to engage within the

trackway constructed with a radially-opening longitudinally-extending cavity, having a button-engaging stop.

13. In a cash-carrier apparatus, the combination with a suitable track having a longitudinal slotway, and a propulsion-cable having buttons or shoulders, of a cash-carrier provided with a neck to protrude through the slotway, and a longitudinal head to engage within the trackway, constructed with an upwardly-opening longitudinally-extending trough-shaped cavity having therewithin at a central part thereof, a button-engagement abutment, substantially as described.

14. For a cash-carrier apparatus, a carrier or cash-box constructed with a thin neck and a head having a longitudinally-extending cavity provided therewithin with a transversal abutment.

15. For a cash-carrier apparatus, a cash-carrier provided with a neck and a longitudinal head d constructed with an upwardly-opening longitudinally-extending, trough-shaped cavity d^2 having therewithin at a central part thereof a V-shaped button-engagement abutment d^3 , substantially as described.

16. In a cash-carrier apparatus in combination, a main trackway and a propulsion-cable running therealong, and a trackway branching from the main, a cash-carrier adapted to be engaged by the cable and having by a member thereof, a supporting-guide in the trackway, and provided with an obliquely-arranged lip, a switching-plate arranged suitably adjacent the branch to engage the lip of the carrier, to deflect the course of the carrier to the branch trackway.

17. In a cash-carrier apparatus, the combination with a main trackway comprising separated tread portions with a slotway therebetween, and a longitudinal portion opposite the slotway comprising at a suitable place, the recess or opening as at 24^a , a button-provided propulsion-cable running between the said portions of the trackway, and a trackway branching from the main track, and having a divergently-directed course, a switching plate or member and a cash-carrier having a lip or portion to be engaged and deflected by the switch, having a neck and a head to run along within the aforesaid portion of the trackway provided with a radially-opening trough-shaped cavity for the accommodation of the cable, and having an abutment to be engaged by the cable-button, and adapted in ordinary running, to have the button held to engagement with the abutment by a portion of the trackway opposite the slotway, said opening or recess seasonably permitting the disengagement of the cable-button from the head as the carrier takes the branch way.

18. In a cash-carrier apparatus in combination, a main trackway comprising separated runner members or portions, and a branch way divergent therefrom, a switch member, the button-provided cable, the cash-carrier

having a lip to be engaged by the switch member, and having a head with a radially-opening cavity and an abutment, and a longitudinally-ranging portion opposite and substantially parallel with the way between the runner members of the track adapted to form a fulcrum from which the head of the carrier swings in being switched, and said portion being so constructed as to constitute no impediment to the divergent course of the switched carrier, nor to the disengagement of the cable-button from the carrier after the switching of the latter.

19. The combination with the trackway having the branching trackway leading to a "station," the propulsion-cable, the switching member, the carrier, the spring for exerting a pressure on the carrier imparting a normal tendency thereto to follow the main trackway, and the guard-rod 21 for preventing the carrier from being by the spring unduly crowded in a direction opposite and away from the branch way.

20. In a switching-station for a cash-carrier apparatus, the main trackway comprising the runner-rods 23, 23, with the way or opening 25 therebetween and the rod or continuous member 24 ranging above said opening, and having the rise 24^a , the branch trackway G, and a switching device for the carrier.

21. In a switching-station for a cash-carrier apparatus, the main trackway comprising the separated lower runner-rods 23, 23, with the opening 25 therebetween and the median upper rod 24 having the elevation at a suitable place in its course, the branching trackway and a switching member, combined with a cash-box having neck c , cylindrical head d , having trough-shaped opening into which trackway-rod 24 engages, and provided at its bottom with a switch-engaging lip i and having the abutment d^3 , and the propulsion-cable having a button, substantially as described.

22. In a cash-carrier apparatus in combination, a main trackway and a propulsion-cable running therealong, and a trackway branching from the main, a cash-carrier adapted to have engagement with the cable, and having, by a member thereof, a supporting-guide in the trackway, and provided with a lip, a switching-plate arranged suitably adjacent the branch to engage the lip of the carrier, to deflect the course of the carrier to the branch trackway, and a spring-guide exerting a tendency on the cash-carrier moving past the junction of the branch with the main track way to constrain the carrier to follow the main way.

23. A switching-station for a cash-carrier apparatus, a branch way and a main trackway from which said branch leads, comprising parallel bearing or support members, and thereabove, a longitudinally-ranging portion, the continuity of the under side thereof being broken at a suitable point in advance of the junction of the branch with the main

way, a switching device for the carrier adjacent the junction of said ways for the purposes set forth.

24. A switching-station for a cash-carrier apparatus, a branch way and a main trackway from which said branch leads, comprising parallel bearing or support members, and thereabove, a longitudinally-ranging portion, the continuity of the under side thereof being broken at a suitable point in advance of the junction of the branch with the main way, the button-provided propulsion-cable, a switching device for the carrier adjacent the junction of said ways, and a stop for preventing a cable from following and remaining in engagement with the carrier while the latter is continuing its course along the branch way, substantially as described.

25. In a cash-carrier apparatus, the main way at the switching-station comprising lower parallel separated runner-rods 23, 23, and upper rod 24 having the rise 24^a, the branch trackway having junction with the main way, and extending laterally and downwardly therefrom, the switching-plate H supported adjacent the junction of the trackways, and having an inclination to the length of the main way, the spring for exerting a tendency to the carrier to follow the main way, the button-provided cable, the cable-stop 27 in advance of the junction, the cash-carrier having bottom diagonal lip *i*, upstanding neck *c*, cylindrical head *d*, provided with longitudinal trough-shaped opening within which the upper main trackway-rod normally engages, and constructed with the abutment *d*³.

26. In a cash-carrier apparatus, comprising a return tubular slotted trackway, within which a propulsion-cable has its location, and constructed with an entrance-opening for the head of the cash-carrier, which opening has adjacent the slotway the longitudinal extension members as *k*⁴, whereby the opening has substantially a length shorter than the length of the member of the cash-carrier to be entered within the trackway to be engaged by the propulsion-cable.

27. In a cash-carrier apparatus, the tubular trackway comprising the longitudinal slotway *b*, and constructed with incisions or slots *k*³, which extend from points adjacent and at opposite sides of the slotway, the two sides or flanks in advance of said incisions being laterally turned to constitute guide-lips at opposite sides of an entrance-opening into the tubular trackway, members *k*⁴ *k*⁴ remaining next to said incisions constituting members which shorten said opening, substantially as shown.

28. A "plumb" or vertical corner construction for a cash-carrier apparatus comprising a wheel or sheave, the trackway having angularly-arranged portions thereof substantially in the plane of the wheel and tangential to its rim, and a quadrantally-bent trackway portion joining the angularly-arranged

tangential portions which is adjacent but laterally located relatively to the wheel-rim.

29. A "plumb" or vertical corner construction for a cash-carrier apparatus comprising a wheel, the trackway having angularly-arranged portions thereof substantially in the plane of the wheel and tangential to its rim, with a quadrantally-bent trackway portion, joining the angularly-arranged tangential portions, which is adjacent but laterally located relatively to the wheel-rim, in combination with the propulsion-cable running within the trackway and at the corner having frictional engagement with the rim of the wheel.

30. A "plumb" or vertical corner construction for a cash-carrier apparatus comprising a wheel, a trackway consisting of tubular bottom slotted portions, arranged in the plane of the wheel, and substantially tangential to its rim, and two separated rod-like members 30, 30, joining the tubular tracks and extending therefrom in outward curves to assume positions laterally alongside of the wheel-rim and having a general curvature corresponding to that of the rim, substantially as described.

31. A "plumb" or vertical corner construction for a cash-carrier apparatus comprising a wheel, the trackway having angularly-arranged portions thereof substantially in the plane of the wheel and tangential to its rim, with a quadrantally-bent double-membered trackway portion, joining the angularly-arranged tangential portions, which is adjacent but laterally located relatively to the wheel-rim, the upper surface of the member of said quadrantal trackway portion which lies the nearer to the edge of the wheel-rim being transversely inclined.

32. A "plumb" or vertical corner construction for a cash-carrier apparatus comprising a wheel or sheave, the trackway having angularly-arranged portions thereof substantially in the plane of the wheel and tangential to its rim, and a quadrantally-bent trackway portion joining the angularly-arranged tangential portions which is adjacent but laterally located relatively to the wheel-rim, and a guard member outside of the face of the wheel having a location nearer the axis of rotation of the wheel than its rim, for preventing undue outward swinging of the carrier as it rounds the corner.

33. In a cash-carrier apparatus, the combination with two trackways having their general courses in parallelism, and at a turn or corner one thereof being lengthwise extended beyond the other, two wheels or sheaves at the internal corners of the respective trackways arranged in parallel planes, and said wheels and the trackways being offset, and maintaining positions relatively to each other as regarded in their transverse aspects angularly both to the planes and axes of the wheels, and the said trackway portions which round the corners each comprising paired separated quadrantal rod-like members de-

flected to sidewise locations alongside the wheel-rims, for the purpose set forth.

34. In a vertical or "plumb" corner construction for a cash-carrier apparatus, the combination with two slotted tubular slotways having their general courses in parallelism, and at a turn or corner one thereof being lengthwise extended beyond the other, two wheels or sheaves at the internal corners of the respective trackways arranged in substantially parallel planes, and said wheels and the trackways being offset, and maintaining positions relatively to each other as regarded in their transverse aspects angularly both to the planes and axes of the wheels, and the said trackway portions which round the corners each comprising paired separated quadrantal rod-like members deflected to sidewise locations alongside the wheel-rims, with the opening therebetween in a plane substantially parallel with the adjacent wheel.

35. In a cash-carrier apparatus, comprising double trackways, the combination with the trackway-terminals, and a frame comprising the longitudinal rods *m m*, arranged adjacent and in longitudinal extension beyond said terminal portions of the trackways, of the frame or support *L* mounted on, and to slide along, said rods, and having the sheave *o* journaled therein, the peripheral portions of which are in substantially tangential relations to the lines of the trackways, the sheave

n journaled between the said sheave *o* and the intermediate part of the apparatus, the endless propulsion-cable running along and adjacent the said trackway, around the sheave *o*, the bight thereof being extended in running engagement around the sheave *n*, and the spring *p* maintaining an endwise-yielding strain on the frame *L*, substantially as described.

36. In a cash-carrier apparatus, the combination with the trackway-terminal, and a frame comprising the longitudinal rods *m m*, of the frame or support *L* mounted to slide along said rods, and having the sheave *o* journaled therein, the sheave *n* journaled between the said sheave *o* and the intermediate part of the apparatus, the endless propulsion-cable running along the said trackway, around the sheave *o*, the bight thereof being extended in running engagement around the sheave *n*, the bar *R* adjustably engaged with said rods *m*, the set-screws therefor, and the spring *p* applied under stress between the said parts *L* and *R*.

Signed by us at Springfield, Massachusetts, in presence of two subscribing witnesses.

J. H. D. CHAMBERLAIN.

DAVID E. CHISM.

LESLIE A. COOPER.

Witnesses:

WM. S. BELLOWS,

M. A. CAMPBELL.