(No Model.)

4 Sheets—Sheet 1.

J. T. COWLEY.

STORE SERVICE APPARATUS.

No. 562,584. Patented June 23, 1896.

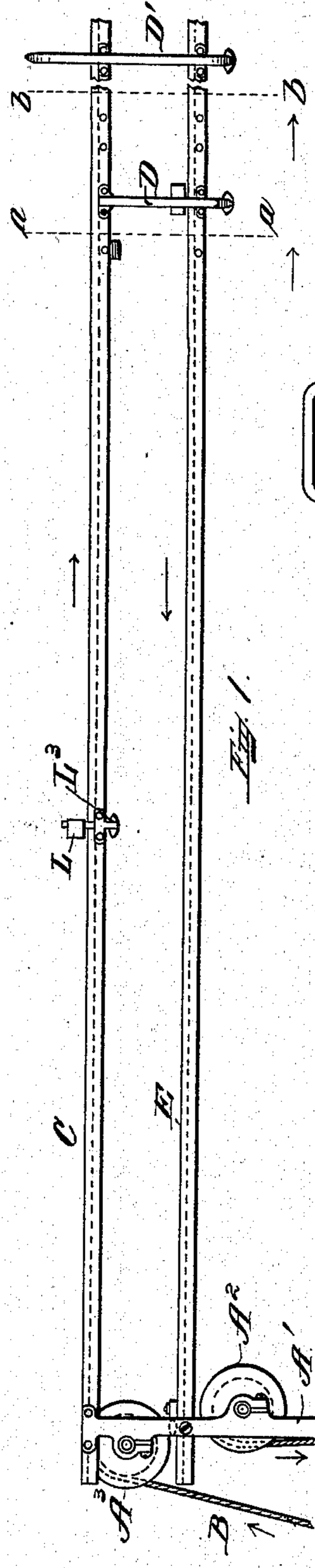

Fig. 1.

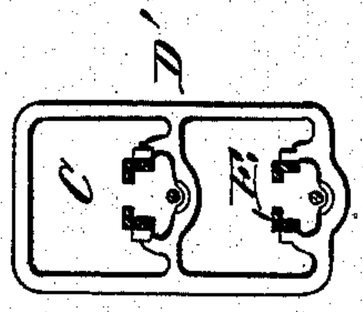

Fig. 5.

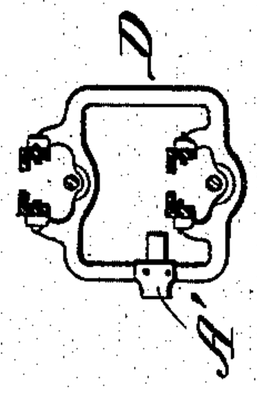

Fig. 4.

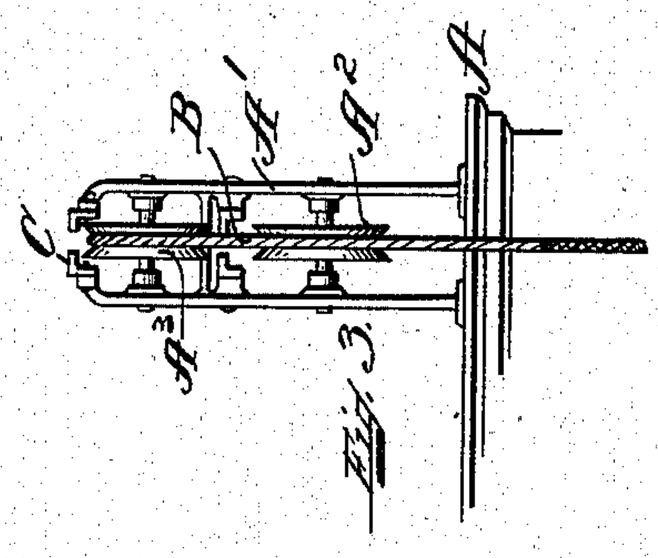

Fig. 3.

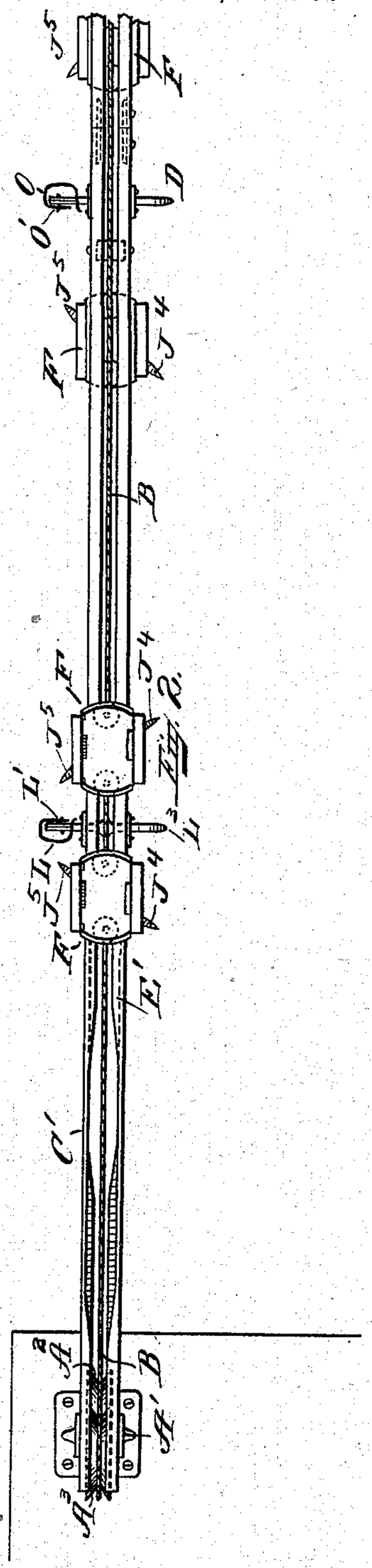

Fig. 2.

Witnesses:
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L. H. Brown.

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(No Model.) 4 Sheets—Sheet 2.

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STORE SERVICE APPARATUS.

No. 562,584. Patented June 23, 1896.

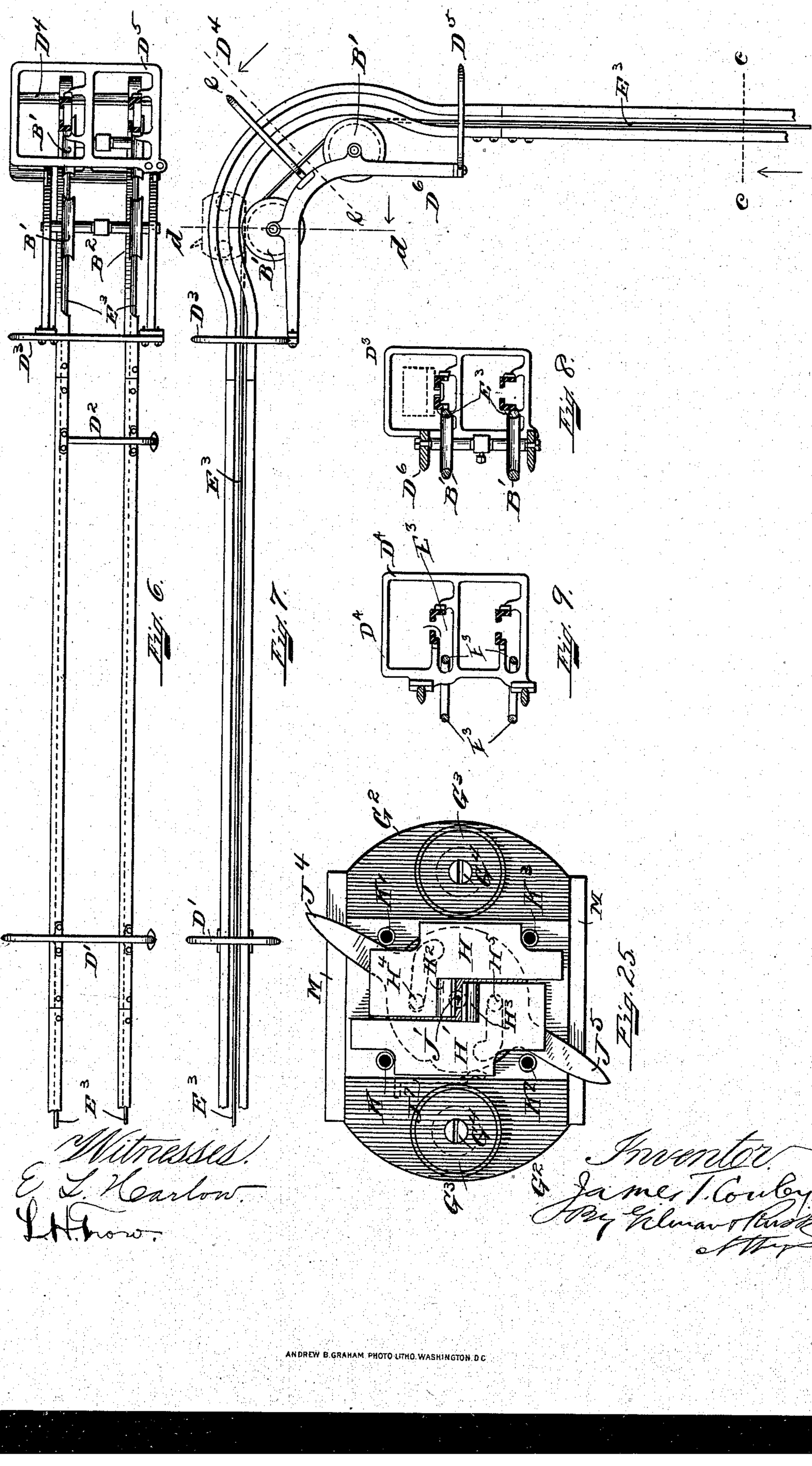

Fig. 6.

Fig. 7.

Fig. 8.

Fig. 9.

Fig. 25.

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(No Model.) 4 Sheets—Sheet 3.

J. T. COWLEY.

STORE SERVICE APPARATUS.

No. 562,584. Patented June 23, 1896.

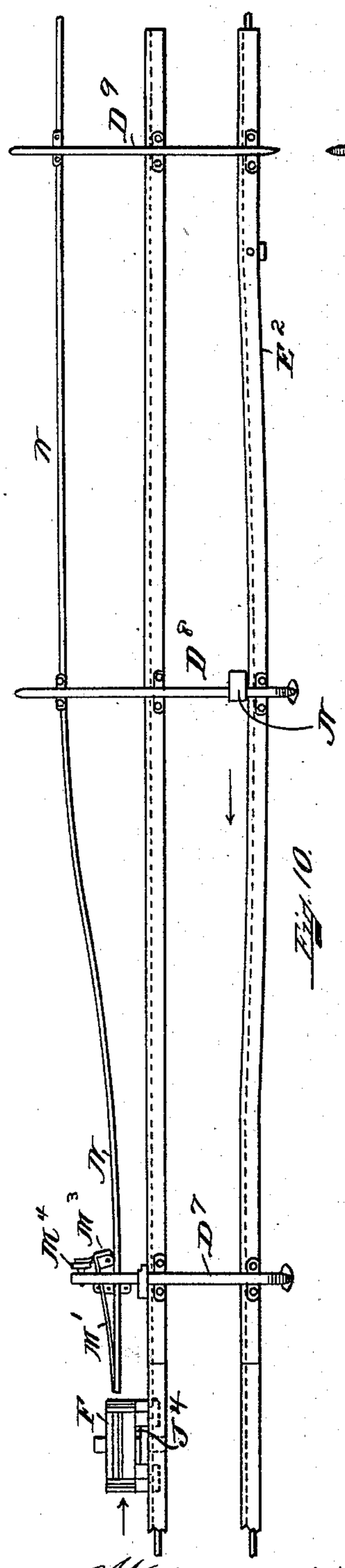

Fig. 10.

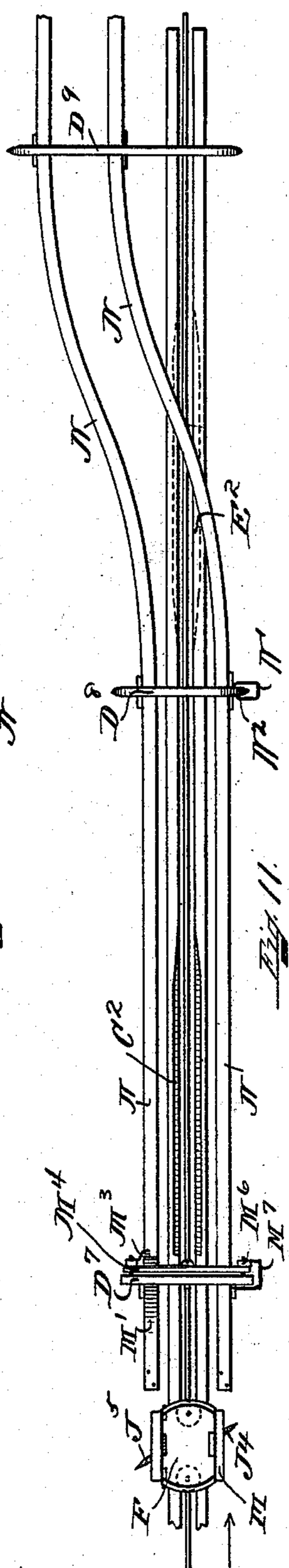

Fig. 11.

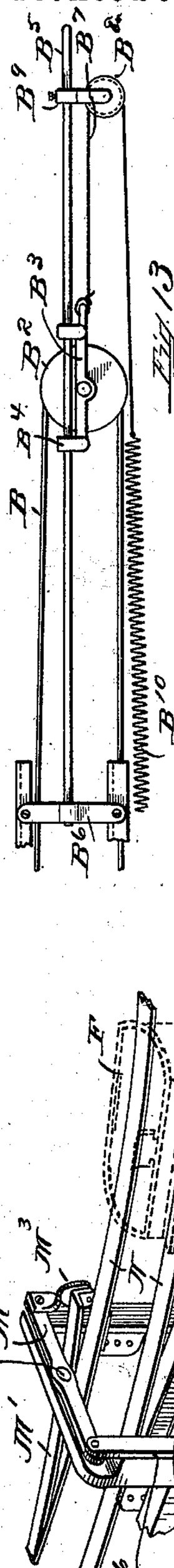

Fig. 13.

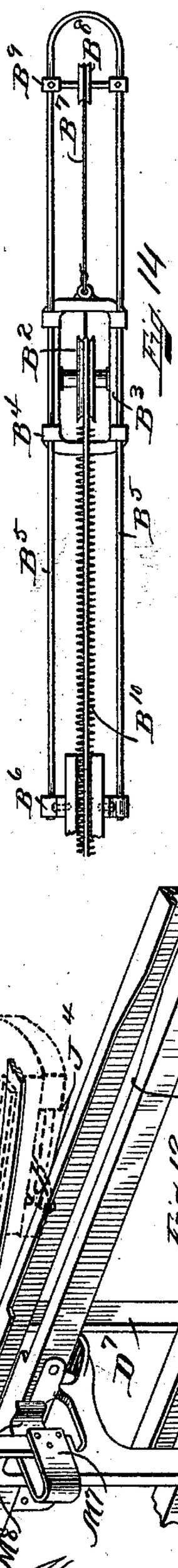

Fig. 14.

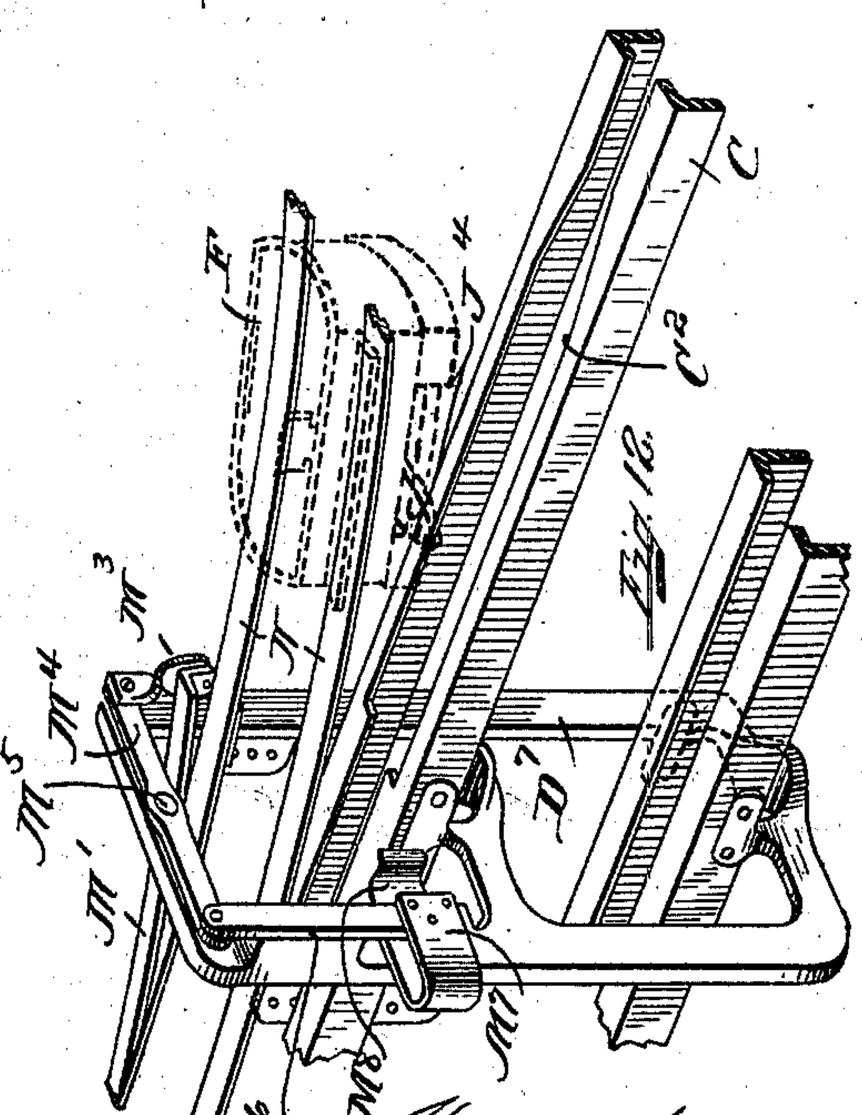

Fig. 12.

Witnesses:
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(No Model.) 4 Sheets—Sheet 4.

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STORE SERVICE APPARATUS.

No. 562,584. Patented June 23, 1896.

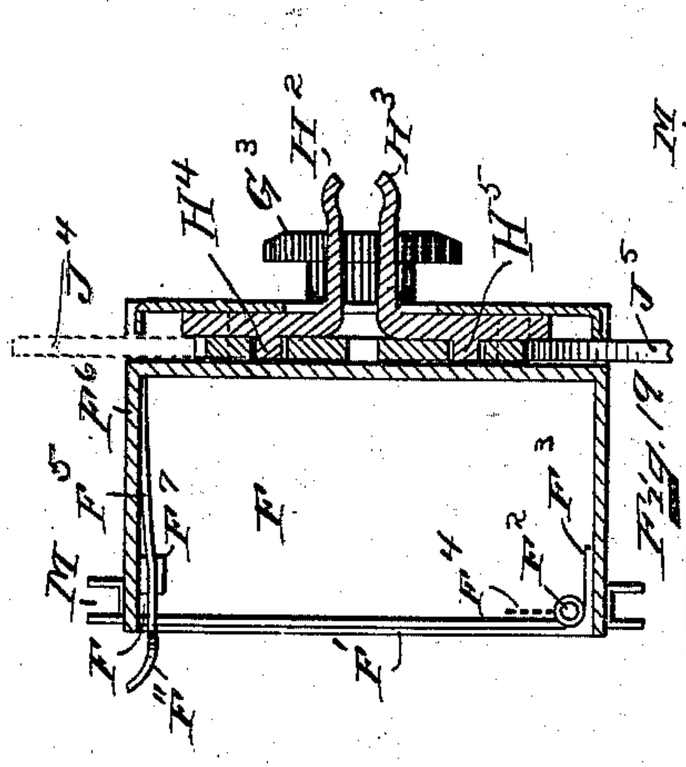

Fig. 16.

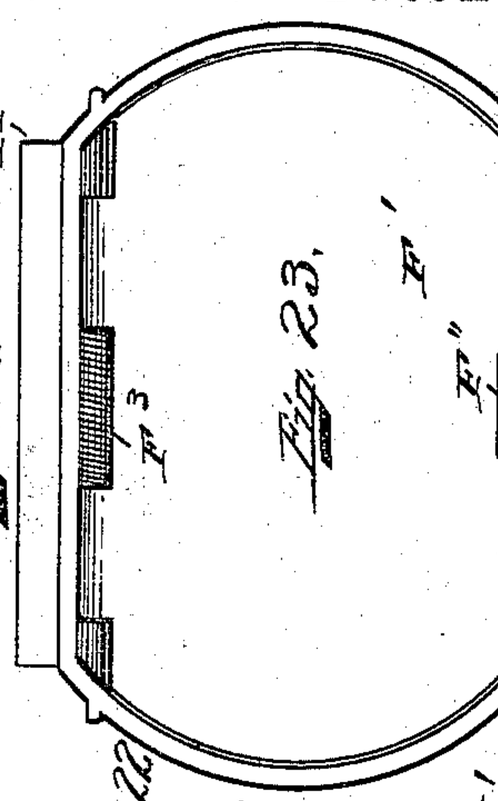

Fig. 22.

Fig. 23.

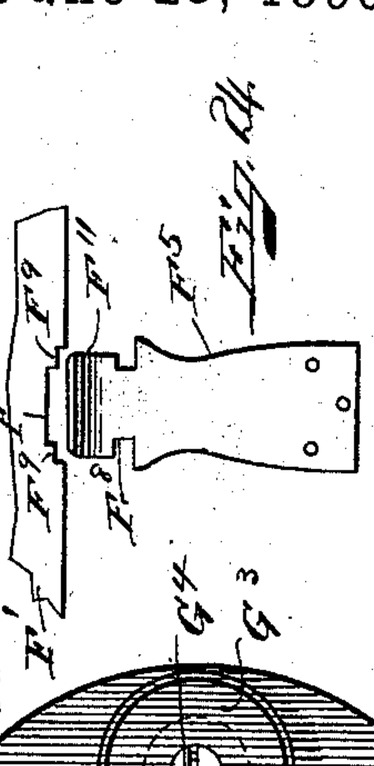

Fig. 24.

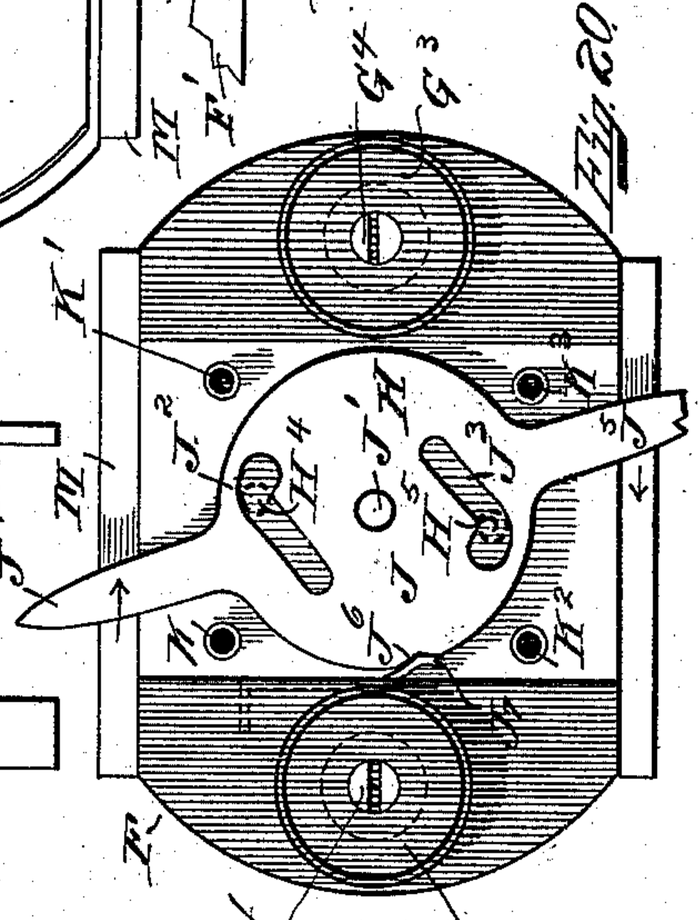

Fig. 20.

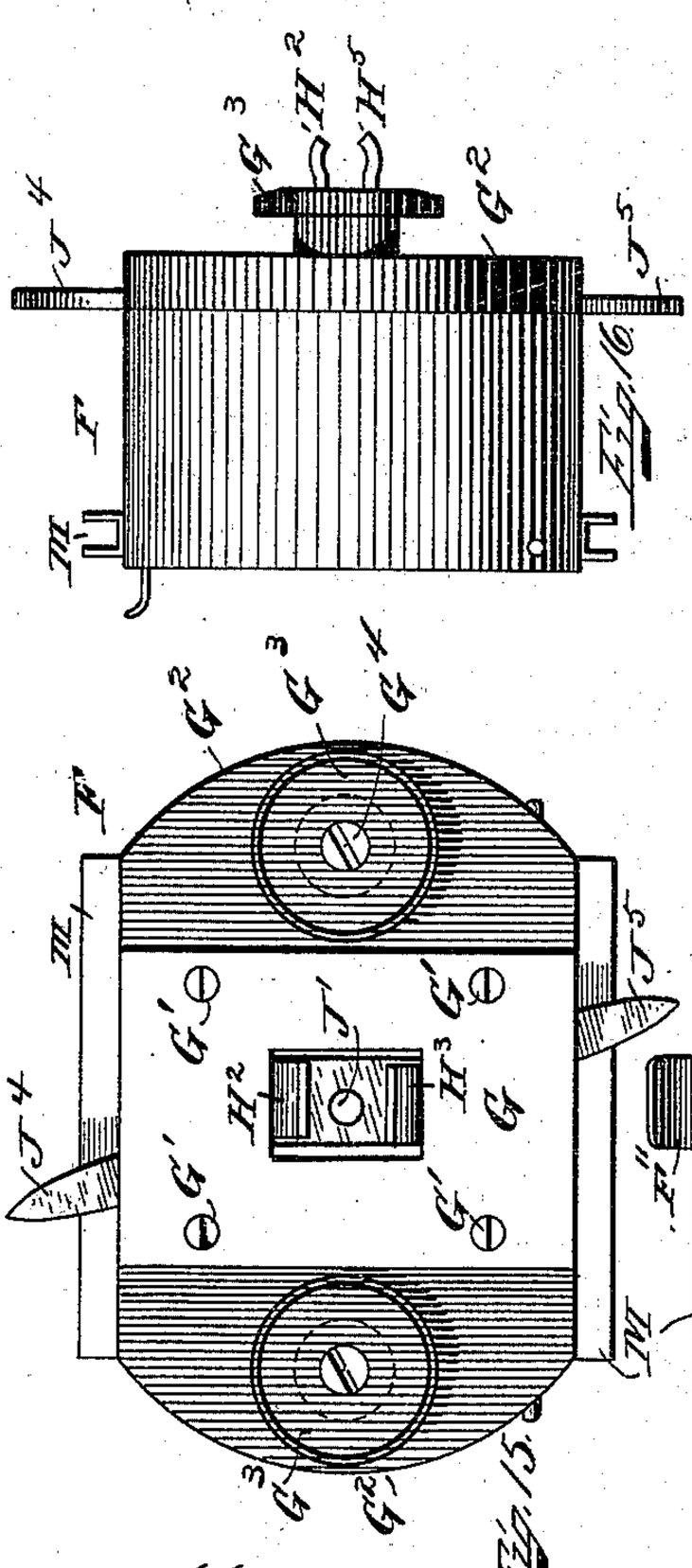

Fig. 19.

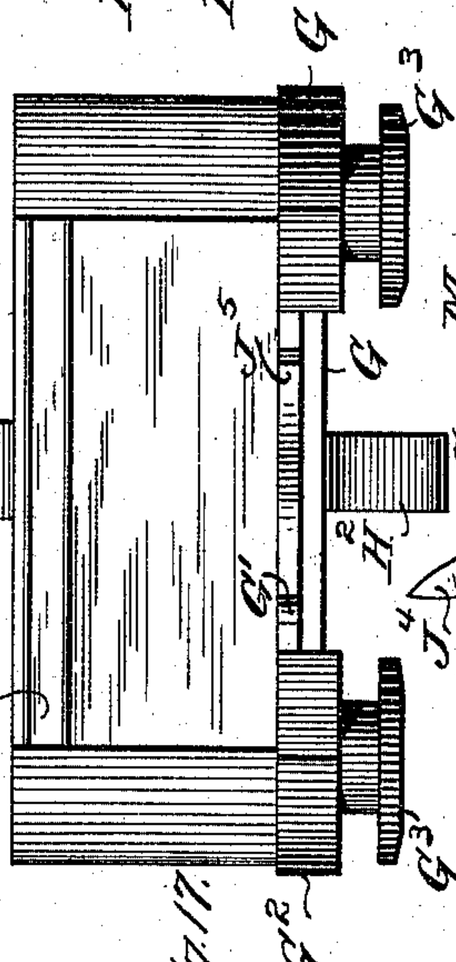

Fig. 17.

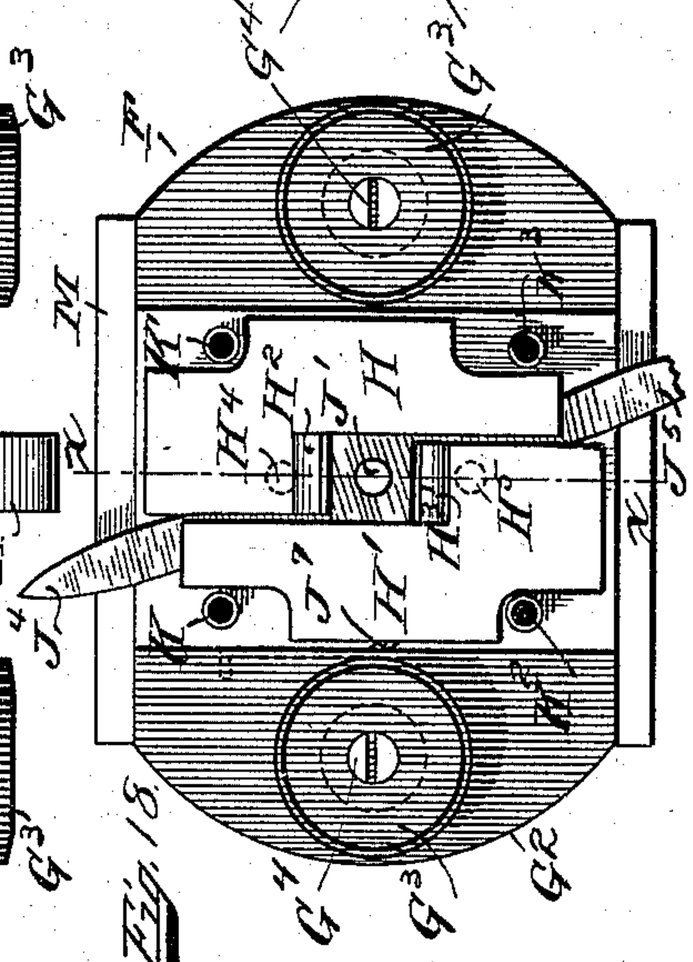

Fig. 18.

Witnesses.
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L. H. Brown.

Inventor.
James T. Cowley
By Edward Rector
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UNITED STATES PATENT OFFICE.

JAMES T. COWLEY, OF LOWELL, MASSACHUSETTS, ASSIGNOR TO THE LAMSON CONSOLIDATED STORE SERVICE COMPANY, OF BOSTON, MASSACHUSETTS.

STORE-SERVICE APPARATUS.

SPECIFICATION forming part of Letters Patent No. 562,584, dated June 23, 1896.

Application filed October 17, 1894. Serial No. 526,159. (No model.)

To all whom it may concern:

Be it known that I, JAMES T. COWLEY, of Lowell, county of Middlesex, and State of Massachusetts, have invented new and useful Improvements in Store-Service Apparatus; and I hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to certain improvements in that class of apparatus which is employed in stores for conveying cash or parcels from the salesman to the cashier and returning the same to the salesman, and especially to that class of cash-carriers in which there is provided a traveling cable to which the cash-boxes are attached and from which they are detached by suitable devices. In such device one part of said endless cord is used for conveying cash-boxes to the cashier's desk from the salesmen's stations, and the other part to return said boxes to the respective salesmen's stations.

One object of my invention is to provide a cash-carrier with such a cable-gripping device that it is immaterial which end of the cash-carrier is in front, as by the arrangement I have provided the grip will be actuated to grip the cord and afterward actuated to be released from the cable-cord without regard to which end of the box is in front.

Another object of this invention is to simplify the construction of such class of devices and produce a machine not only more efficient than the present device in use, but at the same time much less expensive in construction. These and other objects are carried out by the construction of apparatus hereinafter shown, described, and particularly specified in the claims.

My invention consists of certain novel features, arrangements, and combinations hereinafter described, and particularly pointed out in the claims.

In the accompanying drawings, which illustrate my invention, Figure 1 is a side view of the apparatus at the cashier's station. Fig. 2 is a plan view of the same. Fig. 3 is an end view at the cashier's station. Fig. 4 is a cross-section taken on the line *a a*, Fig. 1. Fig. 5 is a cross-section on the line *b b*, Fig. 1. Fig. 6 is a side elevation looking from the line *c c*, Fig. 7. Fig. 7 is a plan view of that part of the apparatus shown in Fig. 6. Fig. 8 is a cross-section through the tracks on the line *d d*, Fig. 7. Fig. 9 is a cross-section through the tracks on the line *e e*, Fig. 7. Fig. 10 is a side view of the apparatus, taken in the vicinity of the salesman's station. Fig. 11 is a plan view of the same. Fig. 12 is an enlarged detail perspective of the switching device at a salesman's station. Fig. 13 is a side view of the take-up device for taking up the slack of the cable. Fig. 14 is a plan view of the same. Fig. 15 is a plan view of the bottom of the cash-box. Fig. 16 is an end view of the cash-box turned on one side. Fig. 17 is a side view of the cash-box. Fig. 18 is a bottom view of the box with the central bottom plate removed. Fig. 19 is a cross-section through the box on the line *x x*, Fig. 18. Fig. 20 is a bottom view of the cash-box with the bottom plate and gripping-plates removed. Figs. 21 and 22, respectively, represent a plan and a side elevation of one of the gripping-plates. Fig. 23 represents a top view of the cash-box. Fig. 24 represents a detail view of the improved latch mechanism for holding the top closed. Fig. 25 is a plan view of the bottom of the cash-box with the bottom plate removed and showing the position of the parts when the box is gripped to the cable.

Like letters of reference refer to like parts throughout the several views.

On the top of the cashier's desk A there is fixed a vertical standard A′, in which are journaled, one above the other, two pulleys A^2 and A^3, out of vertical alinement, and the cable B passes down around the pulley A^2 to a suitable driving mechanism, and up over the pulley A^3, and in normal position lies below the line of the tracks C E, and travels in the direction indicated by the arrows. This cable extends past the salesmen's stations to the end of the line and around a pulley B^2, mounted on a carriage B^3, provided with four lugs B^4, which fit around the rods B^5 and are adapted to move thereon. The rods B^5 are secured at their inner ends to a frame B^6, secured to the upper and lower tracks, and are supported by said frame. To one end of said carriage there is secured a cord B^7, which passes around a pulley B^8, journaled in the frame B^9, mounted on and

securely fixed to the rods B^5. This cord passes around the pulley B^8, and is secured to the inner end of a suitable spring B^{10}, the opposite end of which is attached to a bracket or any desirable part of the apparatus. The tension of this spring tends to draw the carriage B^3 outwardly toward the frame B^9, and in this way all slack in the cable is taken up. (See Figs. 13 and 14.)

The return-track C, leading from the cashier to the various salesmen's stations, and the forwarding-track E, leading from the several salesmen's stations to the cashier, are one above the other, and are each constructed of two right-angle metal pieces which are arranged opposite and parallel to each other. The brackets D, D′, D^2, D^3, D^4, D^5, D^7, D^8, and D^9 are secured to the two tracks and support the same in suitable relative position.

The cable normally lies below the tracks in the bottom recess in each of the brackets, as shown in Figs. 4 and 5, except at a corner where it passes around the pulleys B′, suitably journaled in a substantially right-angle arm D^6, to which the brackets D^3, D^4, and D^5 are also secured, the upper and lower tracks at the corners being cut away at E^3, as shown in Figs. 6 and 9, so that the cable may engage with the grooves of the pulleys B′.

The tracks C and E at the cashier's station are respectively cut away, as shown in Fig. 2, to permit the insertion of the carrier in the track at C′, and to permit its removal at E′ by the cashier.

The cash-box F is provided with a top F′, secured fast to a shaft F^2, around which the spring F^3 is wound, and at one end bears against the side of the box, and the other end F^4 bears against the under side of the cover, so that the tendency is to throw the cover up and expose the inside of the box. A spring-latch F^5 at its lower end is secured to the front side of the box at F^6, and its outward movement is controlled by a clip F^7. Near its upper end the said spring-latch is cut inward on each side to form recess F^8. The cover F′ has two recesses F^9 and beyond these recesses there is a reëntering recess F^{10}. As the cover is pushed down against the top F^{11} of the latch, the recesses F^9 bear against said part and press it outward until said recesses come in line with the recesses F^8, when that part of the metal beyond the recesses F^9 catches under the recesses F^8 and holds the cover locked. When it is desired to open the cover, the latch F is pressed outward until the recesses F^8 are in line with the recesses F^9, when the cover opens under the pressure of the spring F^3.

On the bottom side of the box there is a central plate G, held in its place by four screws G′, and on each side of said plate there is a piece of hard-rubber fiber G^2, and below said fiber there is a button of hard-rubber fiber G^3, provided with a suitable sleeve of hard-rubber fiber and a screw G^4 secures said button to the fiber and the fiber to the bottom of the box, and holds the same in fixed position. Below the plate G the gripping devices for gripping the box to the cable are located. On a central pin J′, projecting from the bottom of the box, a cam-plate J is mounted, and moves on said pin as a center. On each side of the pin J′ there are located the cam-slots J^2 J^3, and beyond said cam-slots there project the fingers J^4 and J^5 on the left and right respectively. In one side of the periphery of the cam-plate there is an angular cut J^6, in which the spring J^7, secured in one of the hard-rubber blocks G^2, bears and holds said cam-plate in the position shown in Figs. 15, 18, 19, and 20. This spring, while it permits a movement of the fingers J^4 and J^5 under pressure, in a direction indicated by the arrows, returns said fingers to the normal position shown in Fig. 20 as soon as the pressure is removed. Above said cam-plate there are located two gripping-plates H and H′, provided, respectively, with upwardly-projecting fingers H^2 H^3, between which the cable is adapted to be caught and the boxes gripped to said cable. From the under side of said plates H and H′ there project downwardly two pins H^4 and H^5, the pin H^4 passing into the cam-slot J^2 and the pin H^5 passing into the cam-slot J^3, and in the normal position of the parts the pins H^4 and H^5 rest in said slots in the position indicated by dotted lines, Fig. 20. The remaining rounded portion of the slot permits the said fingers J^4 and J^5 to move, under pressure, a distance limited by the pins K and K^3, and as soon as the pressure is removed the spring J^7 slips back into the angular recess J^6 and returns said plate to the position shown in Fig. 20.

When the box is gripped to the cord, the position of the parts is as shown in Fig. 25, and the limit of movement of the fingers J^4 and J^5 is determined, respectively, by the pins K′ and K^2, but in this position the pins H^4 and H^5 are respectively at the end of the straight portions of the slots J^2 and J^3. The cam-plate J and the gripping-plates H and H′ are held down in place by the screws G′, which pass in through the plate and into the pins K, K′, K^2, and K^3, and by means of this plate all the parts are held in their proper positions.

The construction of the slots J^2 and J^3, from an inspection of the drawings, will show that as the fingers J^4 and J^5 are moved in a direction indicated by the arrows *b* the pins H^4 and H^5 are drawn nearer to the center pin J′ and consequently the plates H and H′, with the fingers H^2 and H^3, are drawn together, and in this manner the said gripping-fingers H^2 and H^3 close on the cable B until the box is released therefrom.

The first movement of the cam-plate J and gripping-plates H and H′ is to cause the fingers H^2 and H^3 to close up quickly on the cord, and the shape of the cam-slot is such as to give a slow and powerful movement to the jaws, which close tightly on the cord. The grips remain in this position until the

finger J^4 or J^5 strikes an obstruction, which reverses the position shown in Fig. 25, and brings the pins H^4 and H^5 back in position shown in Fig. 20.

The space left between the normal position of the fingers H^4 and H^5 in the cam-slots J^2 and J^3, as shown in Fig. 20, permits the fingers J^4 and J^5 to move slightly beyond the position shown in Fig. 20, so as to pass the attaching or detaching devices, and as soon as they have passed said devices they return to the position shown in Fig. 20, so as to always project a sufficient distance beyond the sides of the box to contact with the engaging or disengaging devices, and this movement, as above stated, is caused by the spring J^7 returning into the angular cut J^6 as soon as the pressure is removed from the cam-plate.

Supposing a box to have been sent to the cashier, he makes the necessary change and places the box on the track C through the opening C′, which permits the buttons G^3 to pass below the top side of the tracks and under the under side of the top of the tracks, so that the upper parts of the track are on each side and above the button G^3 and below the hard-rubber fiber G^2, as shown in Figs. 8 and 10, and in this manner the carrier rests on the top of the tracks, and is carried along by the cable when it is gripped thereto. A slight push by the cashier to the cash-box moves it until the finger in advance, namely J^5, strikes the spring-plate L, secured at L′ to the bracket L^3, secured to each side of the track C. This spring-plate L offers such an obstruction to the finger J^5 that it is moved from the position shown to the left of said bracket L^3 to that shown to the right of said bracket L^3 in Fig. 2. The moving of the finger in this direction causes the bringing together of the fingers H^2 and H^3 against the cable B, to which the said box is then clamped, and it is drawn along said track C by the cable until it reaches the salesman's station to which it belongs.

In the present instance I have shown a salesman's station nearest the cashier, and shown the box constructed with diverting-flanges M, arranged to be switched at this station. For all stations beyond the first one it will be understood that the cash-boxes are provided with diverting-flanges arranged lower down on the sides of the box to agree with the location of the diverting-plates at each station, which plates gradually lower from the first to the last, the same relatively as the diverting-flanges lower on the sides of the cash-box.

As the box approaches the first salesman's station, (shown in the drawings, Fig. 10,) the diverting-plates N, forming a branch track, pass in between the top and bottom of the diverting-flanges M. A spring-plate M′ is secured at one end to one end of one of the diverting-plates N, and at the other end pivotally secured to a vertical arm M^3, which in turn is pivotally connected to a cross-arm M^4, pivoted at M^5 at the top of the bracket D^7. At the far end of the cross-arm M^4 there is a vertical depending arm M^6, to the lower end of which is secured at M^7 the disengaging spring-plate M^8, which normally is below the line of fingers J^4 and J^5 of the cash-box, but when a cash-box approaches a station to which it belongs the diverting-flanges M engage with the diverting-plates N and pass up on said spring-plate M′, which pulls down the cross-arm M^4 and pulls up the vertical arm M^6, so as to raise up the disengaging spring-plate M^8 in position to move the finger J^4 backward from the position shown in left hand, Fig. 11, to that shown in right hand of Fig. 12. This movement given to the finger J^4 throws the gripping-plates H and H′ from the position shown in Fig. 25 to that shown in Fig 18, and the cam-plate is then in position shown in Fig. 20, so that the gripping-fingers H^2 and H^3 are away from the cable B, and the cash-box F, supported by the diverting-plates N, which gradually rise upward, as shown in Fig. 10, is lifted up out of the track C through the opening C^2, which leaves a clear opening for the buttons at each end of the box, which are normally in the travel of the carrier held beneath the top flanges of the track, and the momentum given to the carrier by the cable before it leaves the same carries the box to the end of the diverting-plates N, where it is removed by simply pulling it off from the plates.

If a carrier does not belong to the first station, the diverting-flange on the side of the box will not engage with the diverting-plates N, and consequently not pull out the spring-plate M^8 to cause the ungripping of the cord, but the box will pass on along the track C to a station at which it belongs, where the operation carried out is identical with that previously described for the cash-box belonging to the first station, as shown in the drawings of this application.

Now, supposing that the salesman at the first station desires to send money to the cashier, he closes the cover of the box and places the box on the track where the lower track E is cut away, as shown at E^2, Fig. 11, which is similar in construction as the recesses C′, E′, and C^2, and permits the hard-rubber-fiber button G^3 to pass below the top of the track, and when the box is pushed along, the top flanges of the track are between the buttons G^3 and the hard-rubber fiber G^2, as when the box was sent from the cashier. A slight push given to the box moves it toward the standard D^8, to which is secured the engaging spring-plate N′, secured at N^2 to the bracket D^8 and similar in construction to the spring-plate L. (Shown in Fig. 2.) This spring-plate, while slightly yielding, the same as the other spring-plates, to the fingers of the cam-plate, moves the finger J^4 backward from the position shown in Figs. 15, 18, and 20 to that shown in Fig. 25, and causes

the gripping of the cable by the fingers H^2 and H^3 of the gripping-plates H and H′, and the box which is gripped to the cable moves along the lower track E until it approaches the disengaging spring-plate O, (see Fig. 2,) secured at O′ to the bracket D, and this plate contacting with the finger J^5 moves said finger backward and releases the gripping-fingers H^2 and H^3 from the cable B. The momentum given to the carrier, however, carries it along to the opening E′ in the lower track E, (see Fig. 2,) from which the box can be removed by the cashier.

In either the normal or the locked position of the gripping devices there is always one finger forward, and it is immaterial which end of the box is put in, as when the gripping devices are in their open position the finger ahead contacts with the engaging device to cause the gripping of the box to the cable, and when the box approaches a disengaging device the finger ahead disengages the gripping device.

An inspection of Figs. 18, 20, and 25 will at once suggest that it is immaterial which end of the box is ahead, as in either case there is one finger in advance to contact with the engaging or disengaging devices without regard to which end of the box is put in first.

In Fig. 20 the grips are shown as in an open position with the pins H^4 and H^5 engaging or working in the slots of the plate J, while in Fig. 25 the grips are shown in a closed position with the cam-slots in the plate J in a different position from that shown in Fig. 20.

When the plate J is moved to the position shown in Fig. 25, the movement of the pins in the cam-slots draws in the grips so as to close the same on the cord, and the cam-slots are so formed that any outward pressure on the grip-finger or side pressure thereon will not tend to open them, as they are firmly held in a closed position by the said slots in the plate J. The object of this grip is to clamp the cable tightly by the fingers with the least possible resistance to the engaging fingers, and the movement of the fingers is quick up to the time of contact with the cord and then the grip of the fingers on the cable is slow and powerful in order to grip the cord tightly. The shape of the cam-slots is such as to produce this movement, because it runs quickly toward the center at the first movement and it closes in quickly, and then the shape is changed and produces a slow movement into the center, that is the distance of the cam-slot gradually decreases toward the center and this produces a slow movement.

In carrier apparatuses of the kind described in this application it is usual to employ springs to hold the grip closed or to hold the grip open, or to both hold the grip open and to hold it closed by means of suitable mechanical devices in connection with the spring; but in the grip shown in this application it will be understood that no springs whatever are employed, and the grip is a positive mechanical one when compared with the springs common in this class of devices.

So far as I am aware at the present time, there has never been in practice a cash-box having a positive locking movement, but in all cases springs have been used to hold the grips in certain positions, either closed or open.

I do not limit myself to the exact arrangement and construction shown, as the same may be varied without departing from the spirit of my invention.

Having thus ascertained the nature and set forth the construction of my invention, what I claim as new, and desire to secure by Letters Patent of the United States, is—

1. In a cable cash-carrier apparatus, the combination of a track and a propelling-cable, with cash-boxes moving on said track, each provided with a gripping device consisting of two members between which the cable is gripped, mechanism for moving said members to and from one another, and yielding devices for actuating said mechanism to move said members.

2. In a cable cash-carrier apparatus, the combination of a track and a propelling-cable, with cash-boxes moving on said track, each provided with a gripping device consisting of a cam-plate having extended fingers, gripping-plates having pins working in slots of said cam-plate, and devices with which said fingers contact adapted to actuate said plate to grip or release the box from the cable.

3. In a cable cash-carrier apparatus, the combination of a main track, a propelling-cable, a branch track leading from the main track, cash-boxes supported and moving on said main track and each having flanges adapted to engage with the branch track and support said cash-boxes thereon, a gripping device for attaching said box to the propelling-cable, and a releasing device adapted to be moved into position to actuate the gripping device of the box whose flanges engage the branch track so as to release the cable from the grip.

4. In a cable cash-carrier apparatus, the combination of a main track, a propelling-cable, a branch track leading from the main track, cash-boxes supported and moving on said main track and having flanges adapted to engage the branch track and support said boxes thereon, a gripping device for attaching said boxes to the propelling-cable, and a device adapted to be thrown into position to open the grip of the carrier by which it is actuated and thereby release the cable from the said grip.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, on this 12th day of October, 1894.

JAMES T. COWLEY.

Witnesses:
SAML. E. KIMBALL,
ETTA COURTNEY.