

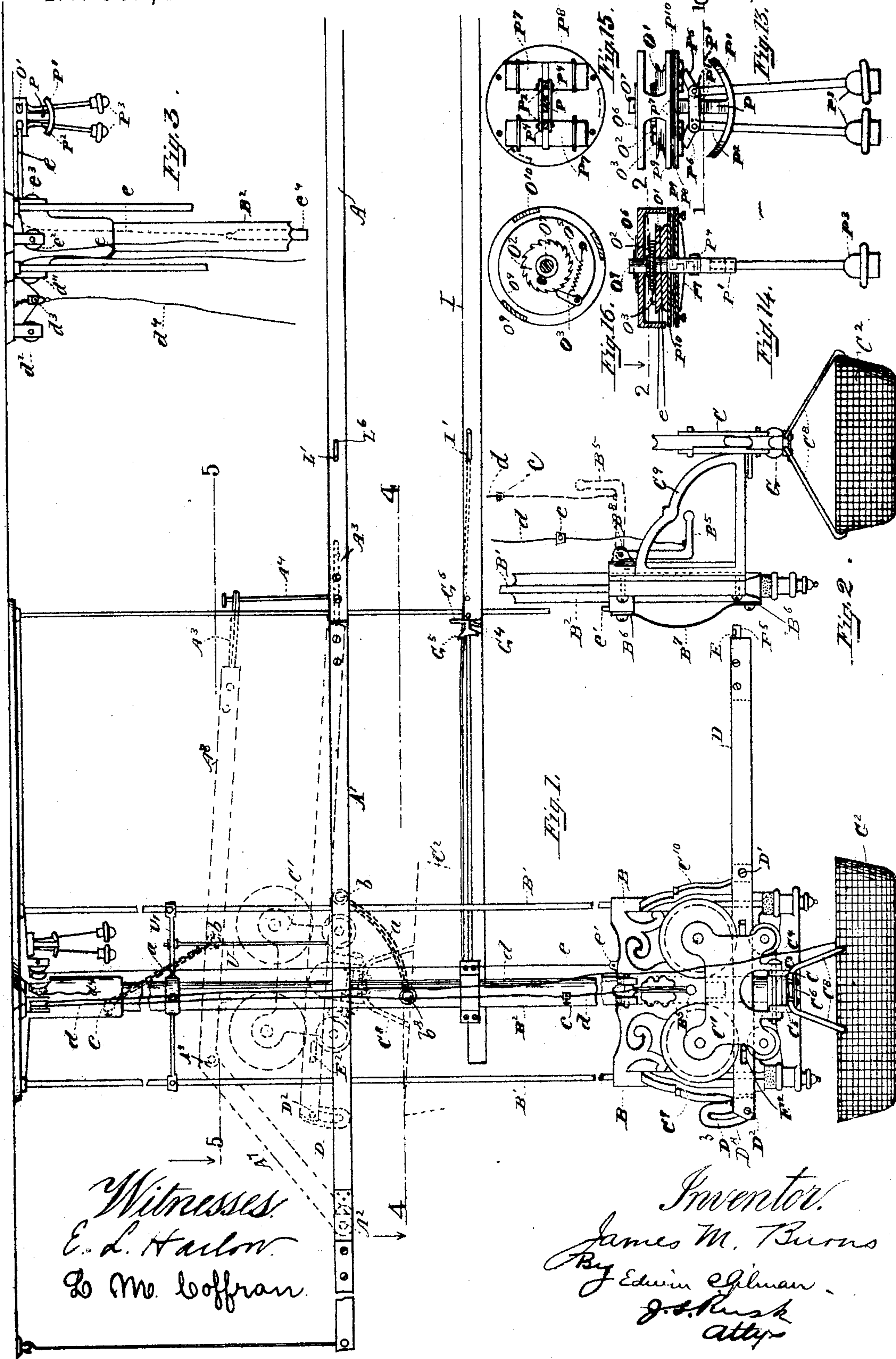
(No Model.)

3 Sheets—Sheet 1.

J. M. BURNS.
STORE SERVICE APPARATUS.

No. 502,277.

Patented Aug. 1, 1893.



Witnesses
E. L. Hailor
L. M. Loffman

Inventor
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By Edwin C. Gilman
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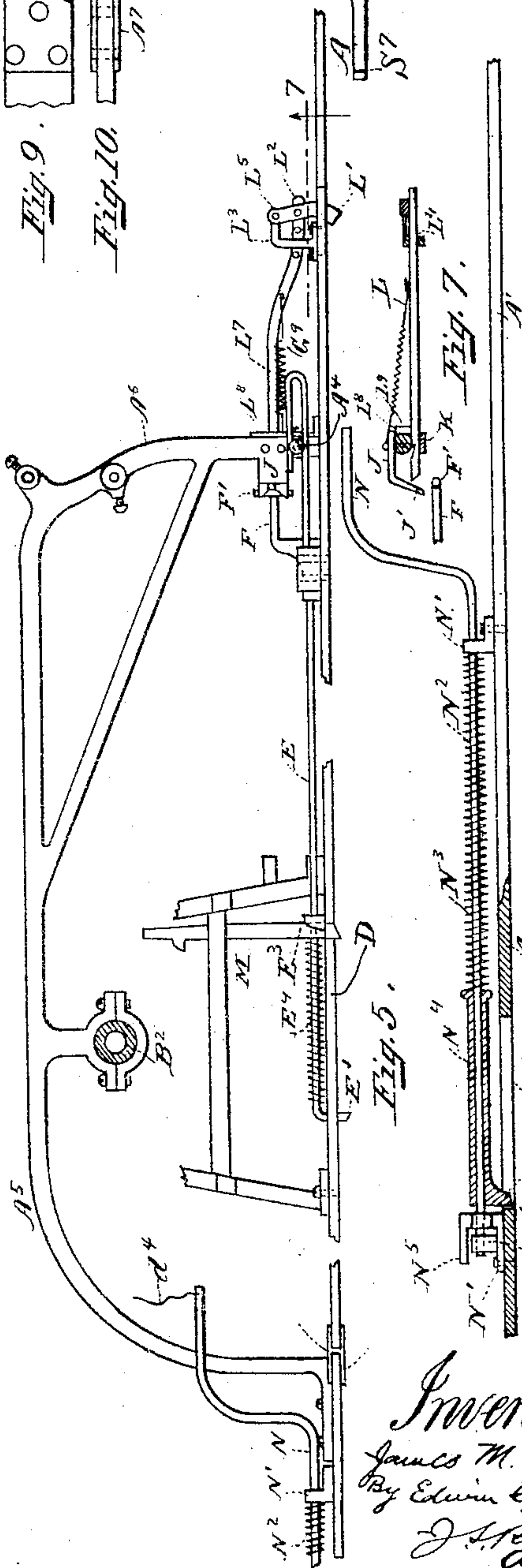
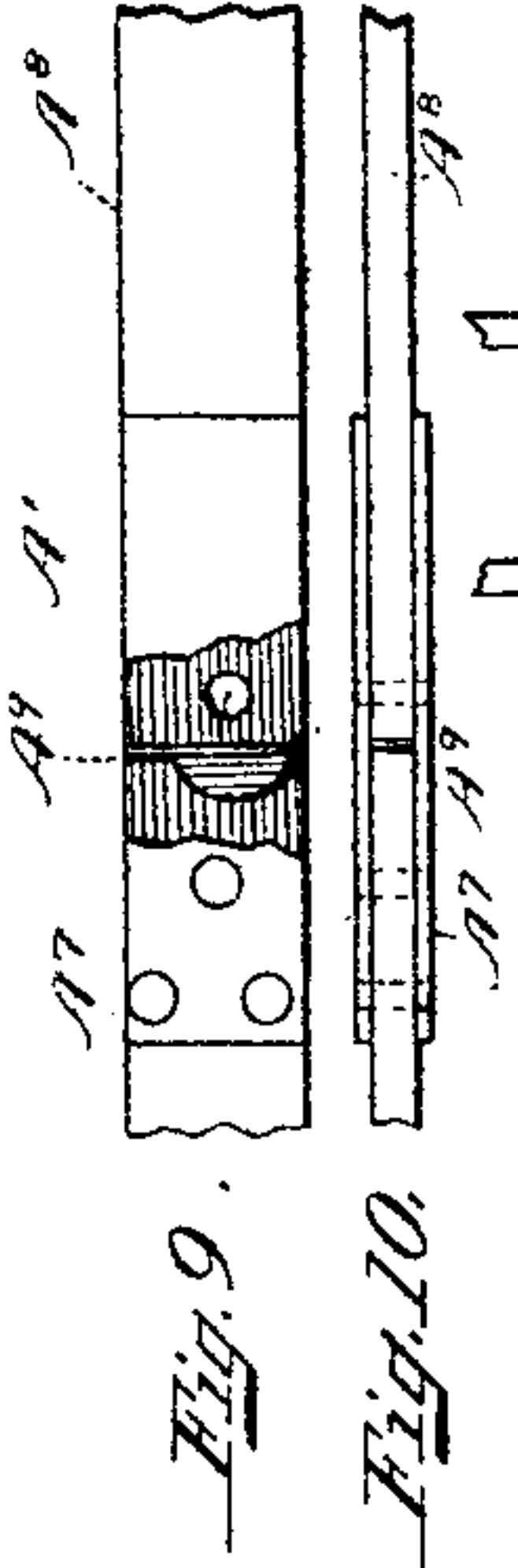
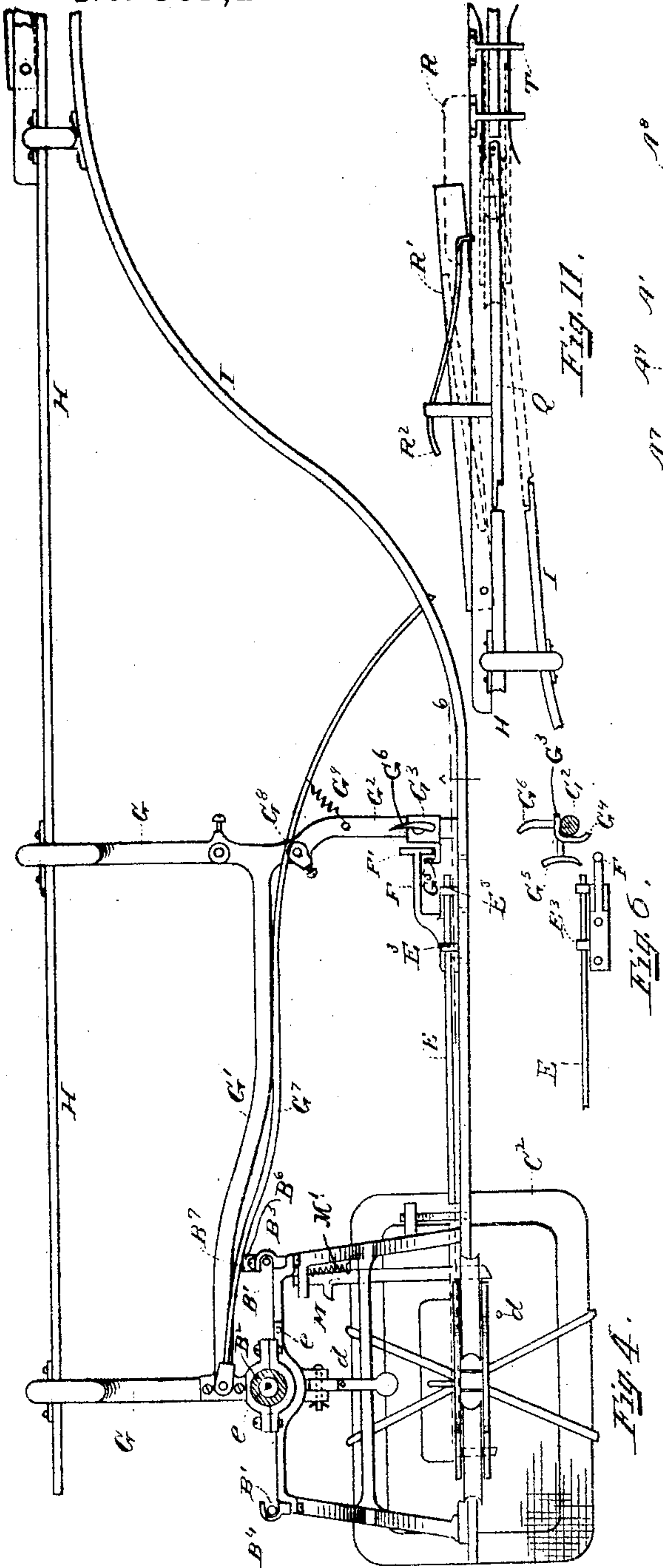
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3 Sheets—Sheet 2.

J. M. BURNS.
STORE SERVICE APPARATUS.

No. 502,277.

Patented Aug. 1, 1893.



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(No Model.)

3 Sheets—Sheet 3.

J. M. BURNS.
STORE SERVICE APPARATUS.

No. 502,277.

Patented Aug. 1, 1893.

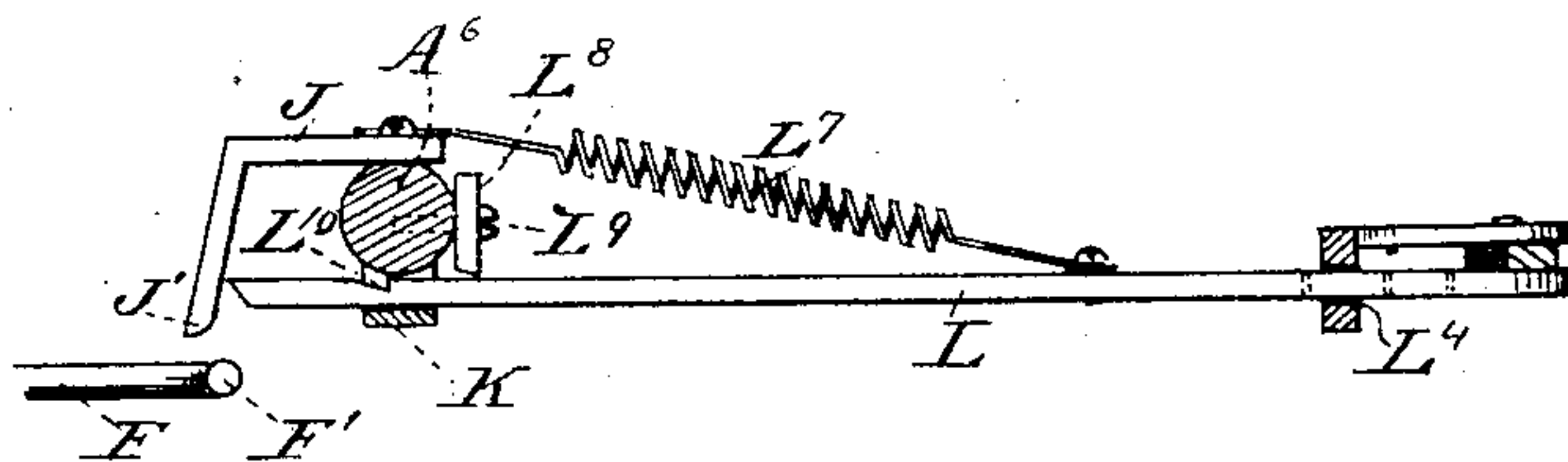
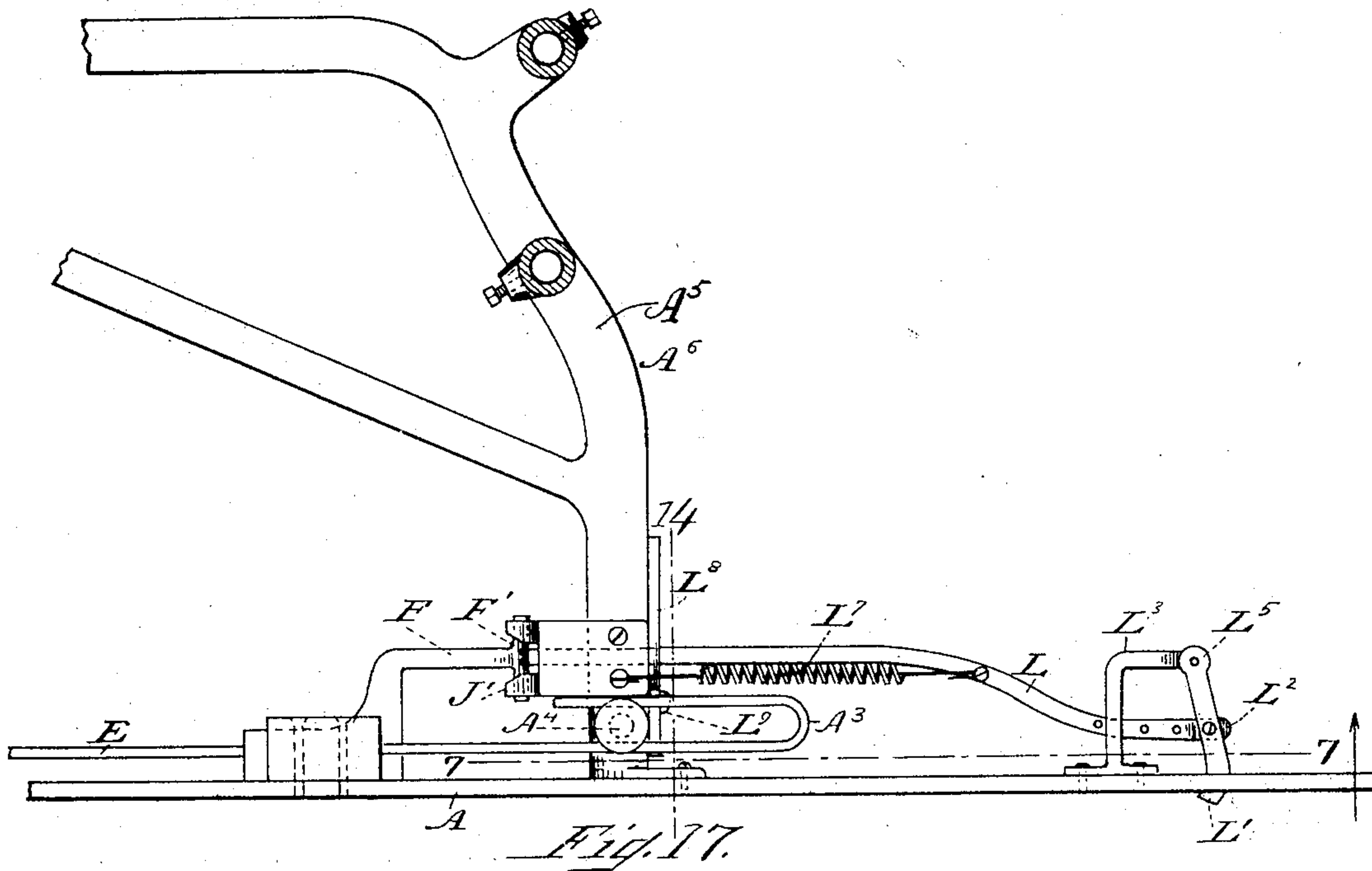


Fig. 18.

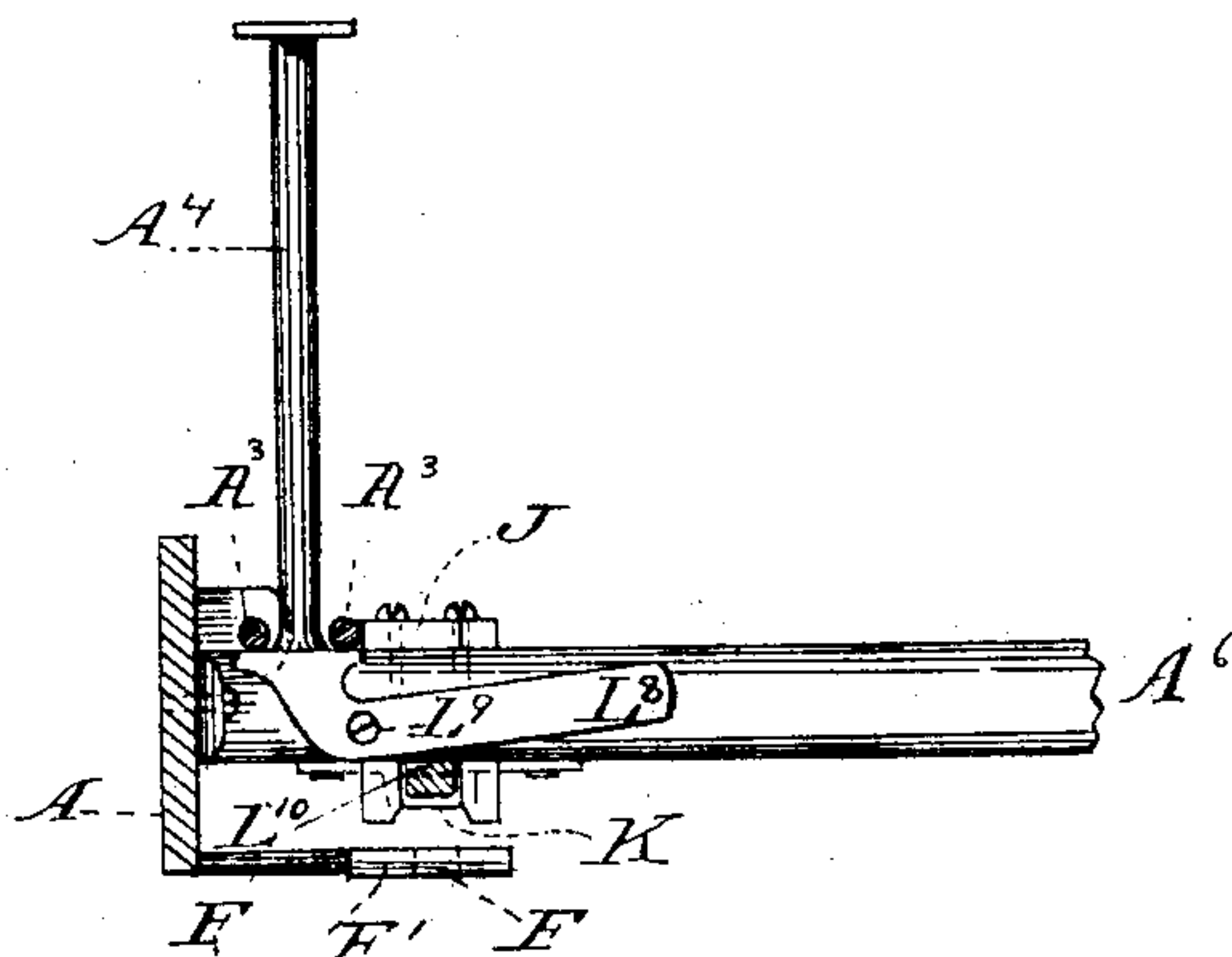


Fig. 19.

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UNITED STATES PATENT OFFICE

JAMES M. BURNS, OF CHICAGO, ILLINOIS, ASSIGNOR TO THE LAMSON CONSOLIDATED STORE SERVICE COMPANY, OF BOSTON, MASSACHUSETTS.

STORE-SERVICE APPARATUS.

SPECIFICATION forming part of Letters Patent No. 502,277, dated August 1, 1893.

Application filed March 31, 1891. Serial No. 387,088. (No model.)

To all whom it may concern:

Be it known that I, JAMES M. BURNS, of Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Store-Service Apparatus, of which the following, taken in connection with the accompanying drawings, is a specification.

My invention relates to improvements in cash and bundle carriers.

10 The object of my invention is to provide a means for the automatic disengagement of the carrier from the elevator track section when said section is in line with the main track.

15 Another object is to provide means for regulating the descent of the elevator from the upper track to the switch track, and also with a car on it when this car by its momentum unlocks the elevator from its engagement with the lower branch track and allows the elevator and car to descend to within reach of the salesman.

25 Another object is to provide means for arresting the carriers on the lower branch tracks when the track is opened by the elevator with a carrier descending to the salesman.

30 Another object is to provide means for causing the disengagement of the elevator track section with the main track and allowing the movable section of said main track to return to its position after the carrier has left the elevator track section.

35 Another object is to provide means for causing the engagement of the elevator track section with the lower branch track to receive the returning carrier after the disengagement of the elevator track section with the main track.

40 Another object is to provide an improved connection between the basket and the body of the carrier.

Another object is to provide an improved track support.

45 Another object of my invention is to connect the elevator rope to the elevator in such a manner that the weight of the basket and its load will not be thrown against the guide rods as the elevator ascends.

50 With these and other objects in view, my invention consists of certain novel features of construction and arrangement of parts hereinafter described and pointed out in the claims.

In the accompanying drawings which illustrate my invention: Figure 1 is a front elevation of my improved apparatus showing the elevator and carrier within reach of the salesman and showing in dotted lines the movable section of the main track out of its normal position and the elevator track section in connection with the main track and inclined so as to start the carrier. Fig. 2 is an end elevation of the standard, elevator and carrier in their lowest positions. Fig. 3 is an enlarged side elevation of the standard showing the system of pulleys and in dotted lines the weight connected to the governor rope for regulating the descent of the elevator. Fig. 4 is a horizontal section on the line 4—4 of Fig. 1 looking in the direction indicated by the arrow. Fig. 5 is a horizontal section on the line 5—5 of Fig. 1 looking in the direction of the arrow. Fig. 6 represents detail views on line 6—6 of Fig. 4. Fig. 7 is a detail view on line 7—7 of Fig. 5. Fig. 8 is a plan view of the device for preventing carriers from running into the pivoted movable section of the main track when said section is out of its normal position to allow the dispatch of a carrier from elevator track section. Fig. 9 is a side view, partly in section, of the pivoted track section. Fig. 10 is a plan view of the same. Fig. 11 is a plan view of the return track and switch, with a carrier approaching the switch and about to automatically swing the pivoted section of the track into engagement with the switch. Fig. 12 is an end view of the track supports. Fig. 13 is a side elevation of the improved governor. Fig. 14 is a vertical central section of the governor. Fig. 15 is a plan view of the governor taken on line 1—1 of Fig. 13 and looking in the direction indicated by the arrow. Fig. 16 is a plan view of the governor taken on line 2—2 of Fig. 14 and looking in the direction indicated by the arrow. Figs. 17 and 18 are enlarged views of the construction shown in Figs. 5 and 7. Fig. 18 is taken on the line 7—7 of Figs. 5 and 17. Fig. 19 is a detailed view taken on the line 14 of Fig. 12, hereinafter described. Like letters of reference refer to like parts throughout the several views.

The main or forwarding track A is held in place by proper supports hereinafter described and has a movable section A' pivoted by a pin A² at one end to the upper contiguous

ous stationary portion of the track A, the free end of said section being provided with a loop A³ sliding on a vertical post A⁴ which extends upward from the arm A⁶ of the bracket A⁵ which is fastened to the main track A on each side of the movable section A' and when said loop rests upon the bracket A⁵, the movable section is in line with the main track A.

A chain *a* is fastened to the movable section A' at a point *b* and has a ring *b*^a around rope *d* at the other end; sleeve *c* is attached to rope *d* and when the rope which is connected to the elevator B at one end, the other end extending to the operator is pulled by him; to raise the elevator the sleeve *c* catches the ring on the end of the chain *a* and raises the movable section A' from its alignment with the main track A as shown in dotted lines in Fig. 1. The elevator B slides up and down on the guides B' by means of hooked portions B³ and B⁴; the arm B⁵ is pivoted at B⁸ to the front of the elevator and has the rope *d* connected to it and when the rope *d* is pulled by the operator, the arm B⁵ swings to a horizontal position as shown in dotted lines in Fig. 2 thereby causing the strain of the hoisting apparatus to be exerted directly over the basket. By this means the elevator is prevented from binding on its guide rods. If the strain of hoisting the rope did not come over the center of the weight on the elevator, the weight would sag to one side and cause the elevator to bind on its guides.

The carrier C consists of the body C' and basket C² which are connected by bolt C³ passing through the lower ends C⁴ of the body of the carrier and through the upper ends C⁵ of plate C⁶; from each side of the basket a bail C⁸ extends upwardly and then horizontally resting on the plate C⁶, then downwardly to the same side of the basket from which it started; a plate C⁷ bears upon the bails C⁸ and is secured to plate C⁶ by screws whereby the basket is held firmly and prevented from swinging.

To the arm C¹⁰ of the elevator is pivoted the section D by pin D'; the pin D² of said section D moves in a slot in the keeper D³ which extends upward and is pivotally secured at D⁴ to arm C⁹ so as to adjust itself to the vertical movement of pin D² along the slot.

To the rear side of the elevator section D is arranged a horizontally sliding rod E. One end E' at right angles projects through a slot E² in the section D. The rod is suitably supported by bracket E³. A spring E⁴ bears against the arm E' and against bracket E³.

To the rear of the section D and below the end of the rod E is secured the right angled extension F having an arm F' for a purpose hereinafter set forth.

From the hollow standard B² extends a supporting rod G to the return track H; a rod G' extends from the rod G to supporting rod G² which extends from return track H to branch track I.

From a plate G³ secured to rod G² extends

downwardly a curved projection G⁴, from the side, a right-angled projection G⁵ and from the top a rearwardly curved projection G⁶ for a purpose hereinafter set forth.

A steel dog G⁷ of irregular shape is pivotally secured to rod G and extends around projection G⁸ to slot I' in branch I. This rod normally projects through slot I' and prevents carriers from passing that point when the elevator is being raised or lowered. The curved spring B⁶ which is attached to elevator C at the hooked portion B³ comes in contact with dog G⁷ and when the elevator track section D is in alignment with the branch I, the portion B⁷ of the spring B⁶ bears against dog G⁷ and withdraws its point from extending through slot I' in track I, thereby allowing carriers to pass on to the elevator section D and to be automatically lowered to the salesman in a manner hereinafter described. A spring G⁹ tends to keep the point of dog G⁷ through slot I'.

To the rear side of the continuation of the main track A below and parallel to the arm A⁶ of bracket A⁵ extends plate K; between the plate K and the arm A⁶ slides a rod L which normally touches the projections J' of the plate J owing to the spring L⁷. The rod L passes rearwardly through an opening L⁴ in the right-angled projection L³ which is attached to the rear side of track A and is pivotally secured to the lever L' by pin L²; said lever L' moves in a slot L⁶ in the track A and is pivotally secured to the projection L³ by pin L⁵. As the elevator and its track section ascend, the cross arm F' comes in contact with the beveled edge of the rod L and forces it back sufficiently to allow the cross arm to pass beyond it; the spring L⁷ drawing the rod L beneath the arm F' thereby holding the elevator section in alignment with the track A. As the carrier starts from the elevator track section, as shown in Fig. 1, it comes in contact with the lever L' and forces it inward so as to allow the passage of the carrier. This movement of the lever L' draws the rod L rearwardly to sufficient distance to allow the pawl L⁸ pivoted at L⁹ to drop into a cavity L¹⁰ in said rod and holds it in that position against the tension of the spring L⁷. As the elevator and its track section descend the pivoted section A' lowers to its normal position and the loop A³ falls on the free end of the pawl and disengages it from the rod L, thereby allowing said rod to regain its normal position owing to the tension of the spring L⁷.

The arm M is mounted in the elevator frame and extends through a slot in the elevated track section D. A spring M' tends to project the arm M through the slot; the end of the arm is beveled so as to cause the arm M to be forced inward by the body of the carrier when said carrier is passing to be thrown out by tension of spring M' when the carrier has passed said arm, the carrier then being held between E' and arm M. When the carrier is in this position the rod E is drawn in-

ward so as to allow the elevator track section to pass the switch track I, as otherwise the said rod would come in contact with the bottom of rod G² and prevent the upward movement of the elevator. The spring E⁴ around the rod E is not under sufficient tension to give a start to the carrier when the elevator reaches its upper position. The object of said spring is to act as a buffer.

10 The rope d between the pulleys d' d^2 has resting upon it the pulley d^3 attached to the ceiling by a spring. The rope d^4 extends downwardly from said pulley d^3 to the crank arm N of the rod N² mounted in brackets N'.
 15 At the end of the rod farthest from the arm N, a sleeve N⁴ is loosely mounted on the rod; said sleeve has a projection N⁷ extending into the slot A¹⁰ of the track A; a spring N³ bearing against the sleeve N⁴ and bracket N'. A
 20 cam N⁶ is attached to the end of rod N² and as said rod is rocked, owing to the pull on the arm N from the rope d^4 as the rope d is pulled by the operator, the said cam comes in contact with the arm N⁵ of the bracket N' and throws
 25 the rod toward track and the projection N⁷ through the slot A¹⁰; the carriers coming along said track A are stopped by projection N⁷ and the impetus of the carrier is taken up by the spring N³ thereby avoiding jar. The end of
 30 the rod N² at which the cam is attached is in a slot in the bracket N' so as to permit endwise movement of the rod and sleeve attached thereto through the slot A¹⁰ to the track. The operator's rope d passes over pulleys d' and
 35 d^2 and is attached to the arm B⁵ of the elevator frame. The counterbalance rope e is attached to the elevator frame at e' and passes upward and over pulley e^2 to the governor and then over pulley e^3 and down the
 40 hollow standard B² to the weight e^4 .

The governor O which regulates the descent of the elevator frame and carrier is shown in Figs. 13 to 16. This governor is provided with governor disk O' mounted on a
 45 governor shaft P provided at its lower end with guide bars P' for the governor arms P² supporting the governor weights P³ which are spread apart when the shaft P is rotated to the limit allowed by guides P'. Farther up
 50 on the shaft the collar P⁴ is secured and to said collar the governor arms P² are pivoted by pins P⁵. A curved extension P⁶ of the arms rests lightly against the flat springs P⁷ secured to bottom of stationary plate P⁸. A
 55 washer P¹⁰ of leather or suitable material is placed between plate P⁸ and plate P⁹ to cause friction. A ratchet wheel O² is secured to shaft P and the teeth of the ratchet wheel are engaged by a pawl O³ pivotally secured to
 60 disk O'. A spring O⁵ tends to keep the pawl in contact with the teeth. A collar is placed between the ratchet and the upper plate O⁶. A washer is placed on the plate O⁶ around shaft P and a pin O⁷ passes through an eye
 65 in shaft P and holds the parts together. Screws O⁹ along the inside of flanges O¹⁰ of plate O⁶ secure said plate and plate P⁹ se-

curely together. As the operator pulls on the rope d , the elevator B rises along the standards B'. The rope e is attached to the elevator at e' at one end and at the other end to the weight e^4 in the hollow elevator standard B². As the elevator rises, the weight e^4 takes up the slack of the rope e , the weight falling down through the said standard B². The rope
 70 passing around the disk O' to the weight e^4 causes said disk to revolve freely; the pawl O³ is held by spring O⁵ in contact with the teeth of the ratchet O² fixed to and moving with the shaft P. As the elevator with the
 80 basket on it descends, the disk O' is revolved by the rope e ; this movement of the disk causes the shaft P to revolve and spread the governor arms and weight outwardly, and throws the upper ends P⁶ against springs P⁷ which
 85 causes the plate P⁸ to press the washer P¹⁰ which comes in contact with the stationary plate P⁹ to cause sufficient friction to hold the plates in contact. By these means an easy and regular movement of the disk O' is pro-
 90 duced as the basket with its carrier is falling to within reach of the salesman.

The switch for conveying the carriers to their respective stations is shown in plan view Fig. 11; this switch is similar in construction
 95 and operation to that shown and described in Letters Patent granted James Burns November 15, 1887, No. 373,172. As each carrier reaches its proper station, the flange R comes in contact with the inclined piece R' and its
 100 momentum is sufficient to cause the flange R to slide down along the inclined piece and as the end of said piece R' which is farthest from the central station is closer to the track than the other end, the flange on the
 105 carrier causes the free end of the pivoted section Q of the track to be crowded over to the switch track, since the piece R' is fixed and the pivoted section Q of the track is movable. When the flange R crowds the pivoted
 110 section of the track over to unite its free end with the end of the switch track, the wheels of the carrier, of course, follow and by the time they have reached the end of the switch, it and the free end of the pivoted section of
 115 the track coincide so that the carrier rolls on to and along the said switch track. The instant that the flange R has passed the inclined piece R', the wheels have passed entirely on to the switch so that the pivoted section of the track can be and is drawn back
 120 by the spring R² into its place of connection with the return track H. The next carrier intended for that particular station repeats the operation above described, while those in-
 125 tended for stations farther on, pass through without the flange R coming in contact with and rubbing against the inclined piece R'. If there be many stations in the main return track, the inclined piece R' may be located at
 130 different heights as at different distances from the track. This will permit a carrier to be switched off at one station while the next carrier with its flange higher up or lower down on

the carrier plate, although of no greater width than the one which has been just switched off would carry its flange over or under the inclined piece which has effected the switching of the preceding carrier and roll on until a switch was reached, where the inclined piece R' was not only the proper distance from the track but also in the right plane to be struck by the flange R. In this way and by these means any number of switches can be located on the return track and any number of carriers employed without unduly increasing the width of the flange R as would be the case were all the flanges and all the inclined pieces R' arranged in the same plane. A bracket T is attached to the side of the return track and extends upwardly and over said track H and is for the purpose of straightening up the carrier before it reaches the switch.

The movable section A' of the main track A is composed of two parts A⁷ and A⁸ united by a pivot joint A⁹, the pivot being below the center of the two posts, so that when the section A' is drawn from its normal position by chain *a*, it will assist in holding said section in this upper position shown in dotted lines of Fig. 1.

S S' represent two parallel posts in a plane at right angles to the line of the tracks. They may consist of any suitable tubing or they may be formed solid and be made either of wood or metal. Track-supporting brackets S² are provided with three sockets sufficiently large to admit the posts S S'; the parts of the bracket S² in which the sockets are formed are connected by curved braces S³ which prevent the spreading of the socket pieces and when the posts S S' are slid therein or the brackets are slid on the posts, they lock the posts at a certain distance apart and prevent them from tilting in the direction in which the weight of the track and its load would tilt them. I have arranged the brackets on opposite sides of the posts so as to balance the strain upon the posts by forwarding and returning carriers on opposite sides. The arms S⁴ S⁵ lead from the socket heads S⁶ and converge in and unite at points S⁷ S⁸ to which the forwarding track A and return track H are respectively connected.

A downwardly extending rod U is attached to cross piece U' and as the elevator is raised the lower end of said rod U comes in contact with the beveled end of the rod M and forces said rod M inward against spring M' so as to allow the carrier to start upon the incline of elevator track section D to the way A. Suppose that the carrier and its baskets to be in the position shown in Fig. 1. The body of the carrier being held between the arm E' and arm M of the elevator track section D; as the operator pulls on the rope *d*, the arm B⁵ of the elevator swings to a horizontal position and the elevator with its track section and carrier begins to ascend. As the rod E of the elevator section D is thrown inward, it passes the rod G² and the right angled arm F passes by the right

angled projection G⁵ and the downward projection G⁴. The projection G⁵ is for the purpose of holding the elevator track section to alignment with the switch track I in case it should be horizontally displaced and the projection G⁴ for moving said elevator section rearwardly in case it should be not in alignment as it reaches the switch track I by the cross arm F' coming in contact with said projections. The elevator continues its ascent and the cross arm F' of the right-angled projection F comes in contact with the under side of the projection J' having thrown the rod L rearwardly; by these means the elevator track section and the forwarding track are held in alignment as hereinafter described. This end of the track section D is thus held in position and the continued pull on the rope *d* causes the elevator track section D to swing on pivot D' and causes its other end to lift vertically in the slot of the upright projection D³, thus giving an incline to said section D, whereby the carrier is started on its way as the depending rod U is moved in the arm M and the carrier is released; the button *c* in the meantime having come in contact with the ring on chain *a* and lifted said chain and pivoted track section A' to the upright position shown in Fig. 1. The carrier having started upon its way, the operator loosens his hold on the rope *d* and the elevator with its track section D begins to descend and the pivoted track section A' assumes its normal position between the two ends of the track A; the loop A³ sliding down the rod A⁴ has fallen on the inward end of the pawl L⁸ and swings its free end from the engagement with the cavity in the lever L, which lever owing to the spring L⁷, returns to its normal position as shown in Fig. 7. As the elevator and its track section reach the switch track I, the end of the rod falls on the end of the rod G² and holds the elevator section in alignment with said switch track I the upward curved projection G⁸ serving to throw the said elevator section to its proper vertical alignment with said switch track by the said rod E sliding down said upward projection. The rod E stands out sufficiently free to come in contact with said rod G² as the carrier is not pressing against the arm E² of said rod as shown in Fig. 1. As the carrier returns upon the track H, as stated by the bracket T, it operates a switch in a manner hereinafter described and passes to the switch track I and then to the elevator track section D, pushing in the arm M and coming in contact with the arm E² of the rod E and spring E⁴, taking up the impetus of the carrier and avoiding jar. As soon as the body of the carrier passes the arm M, said arm, by reason of its spring M', is thrown downward and holds the carrier between it and the arm E. This inward movement of the rod E caused by the carrier pushing the arm E' along the side E², withdraws the end of the rod E from contact with the rod G² and the elevator with the carrier and its baskets upon

the elevator track section begins to descend in an easy and regular manner owing to the connection of said elevator with the governor heretofore described.

5 Having thus ascertained and described the nature of my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a store service apparatus a forwarding track having a moving section, an ele-
10 vator carrying an elevator track section upon which the carrier is supported, the spring controlled rods E and M attached to said elevator track section, said carrier being held on the elevator track section by the said
15 spring-controlled rods E and M, in combination with a downwardly extending rod U adapted to come in contact with the rod M so as to release the carrier when the said elevator track section is in alignment with the for-
20 warding track, substantially as set forth.

2. The combination in a store service apparatus with a forwarding track having a movable track section, of an elevator carrying a pivotally mounted track section, a ver-
25 tically arranged keeper attached to the elevator, the said elevator track section having one end adapted to engage with said forwarding track, and the other end having a pin adapted to move in a slot of the said keeper so as to
30 occasion an inclination to the track, and start the carrier upon the way, substantially as set forth.

3. In a store service apparatus a forwarding track having stationary sections, a mov-
35 able section pivoted thereto located in line therewith and forming a continuation of the said stationary sections, said section being formed of two parts pivotally secured together and adapted normally to align with
40 the stationary sections of the forwarding track, substantially as set forth.

4. A store service apparatus having forwarding and return tracks, a movable section in said forwarding track, a pivoted lever nor-
45 mally extending through a slot in the forwarding track, a car elevator having an elevator track section adapted to align with the forwarding track means thereon to start the carrier upon the way, the said pivoted lever be-
50 ing adapted to be forced from its projection through the slot by the carrier as it travels from the track section to the forwarding track, means whereby the removal of the lever causes the elevator track section to be released from
55 the forwarding track and the elevator and its track section allowed to descend, and means for holding said pivoted lever in its inward position, substantially as set forth.

5. In a store-service apparatus, an elevator,
60 a rope attached thereto, a hollow standard, a weight arranged therein and connected with the rope, a governor interposed between the weight and the elevator to regulate the descent of the latter, comprising a casing a rotat-
65 able disk contained in said casing and around

which the rope passes, a ratchet-wheel, a pawl carried by the disk and engaging the said wheel, a vertically movable plate located below the said casing and carrying spring arms adapted to be engaged by the governor-arms, 70 and a washer arranged between the said casing and the movable plate, substantially as described.

6. In a store service apparatus having forwarding and return tracks, a slotted switch 75 track from the return track at each way station for receiving the carriers, a dog extending through the slot to prevent the passage of said carriers, a rod connected to the dog an elevator carrying an elevator track section and 80 having on its rear side a curved spring adapted to come in contact with said rod to cause the withdrawal of the dog from the slot when the elevator track section is in alignment with the switch track so as to allow the carriers to pass 85 from the switch track onto the elevator track section, substantially as set forth.

7. In a store service apparatus having forwarding and return tracks, an elevator carrying an elevator track section, an arm pivot- 90 ally secured to the elevator, a rope attached to said arm extending to the operator, the said arm adapted to assume a horizontal position due to a pull upon the operator's rope so as to throw the strain of the hoisting rope directly 95 over the basket, and prevent the elevator binding on its guide rods during its ascent, substantially as set forth.

8. In a store service apparatus the combination of a forwarding track having a movable 100 section, an elevator carrying an elevator track section which is adapted to align with the forwarding track, and means for holding in alignment the elevator track section with the forwarding track, consisting of a plate J, pro- 105 jections J', a spring-pressed rod L, a right-angled arm F, and a cross-arm F', substantially as set forth.

9. In a store service apparatus the combination of a forwarding track having a movable 110 section, an elevator carrying an elevator track section which is adapted to align with the forwarding track, means for securing the elevator track section to the forwarding track, consisting of a plate J, projections J', spring- 115 pressed rod L, a rightangled arm F, and a cross-arm F', and means for releasing the elevator track section consisting of a lever L', rod L, and pawl LH, as the movable section returns to its normal position, substantially 120 as set forth.

In testimony whereof I, JAMES M. BURNS, have signed my name to this specification, in the presence of two subscribing witnesses, on this 26th day of March, A. D. 1891.

JAMES M. BURNS.

Witnesses:

FREDERICK A. SPEAR,
H. W. ROBINSON.