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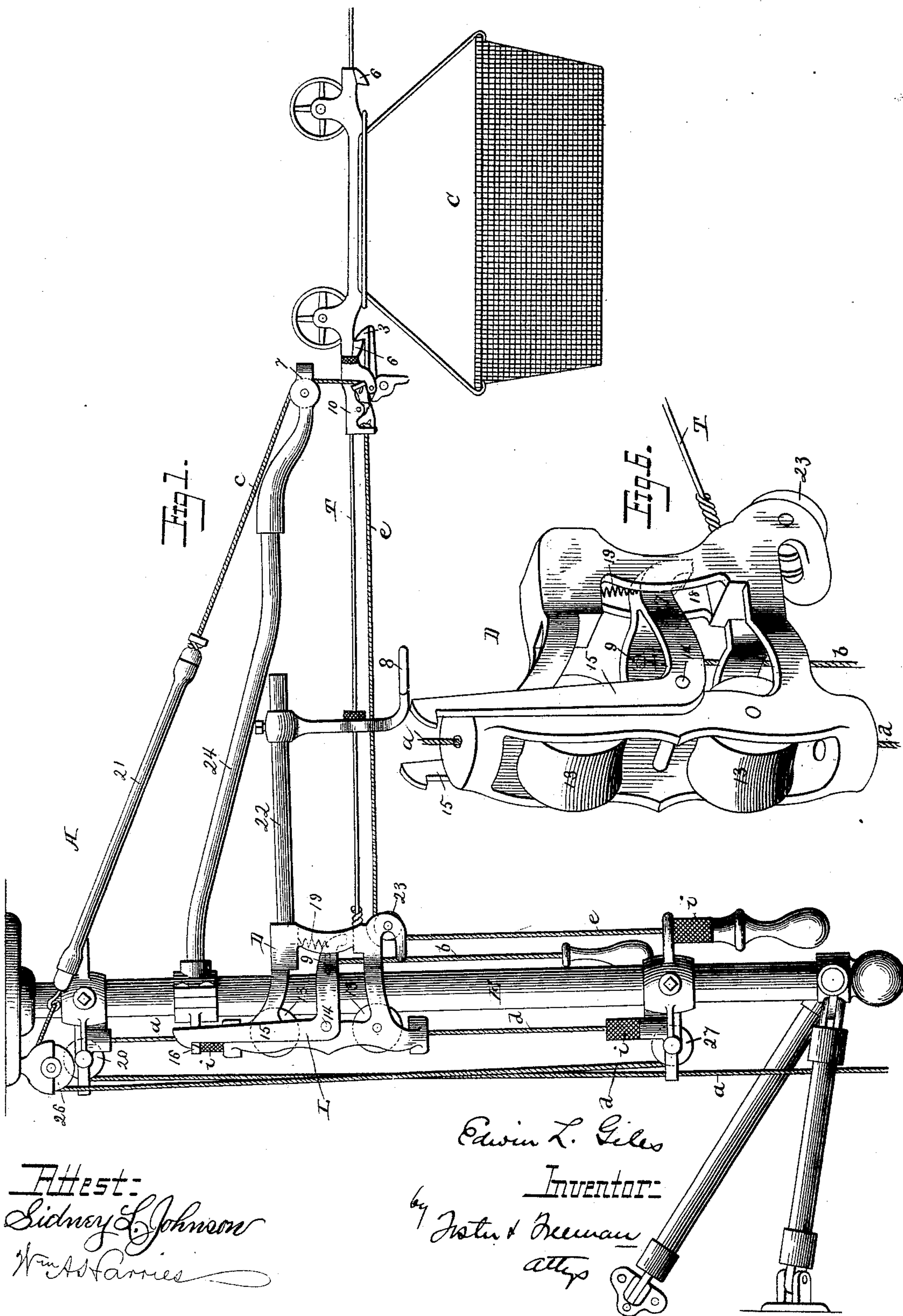
5 Sheets—Sheet 1.

E. L. GILES.

STORE SERVICE APPARATUS.

No. 414,152.

Patented Oct. 29, 1889.



Attest:  
Sidney L. Johnson  
Wm. A. Harris

Edwin L. Giles  
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(No Model.)

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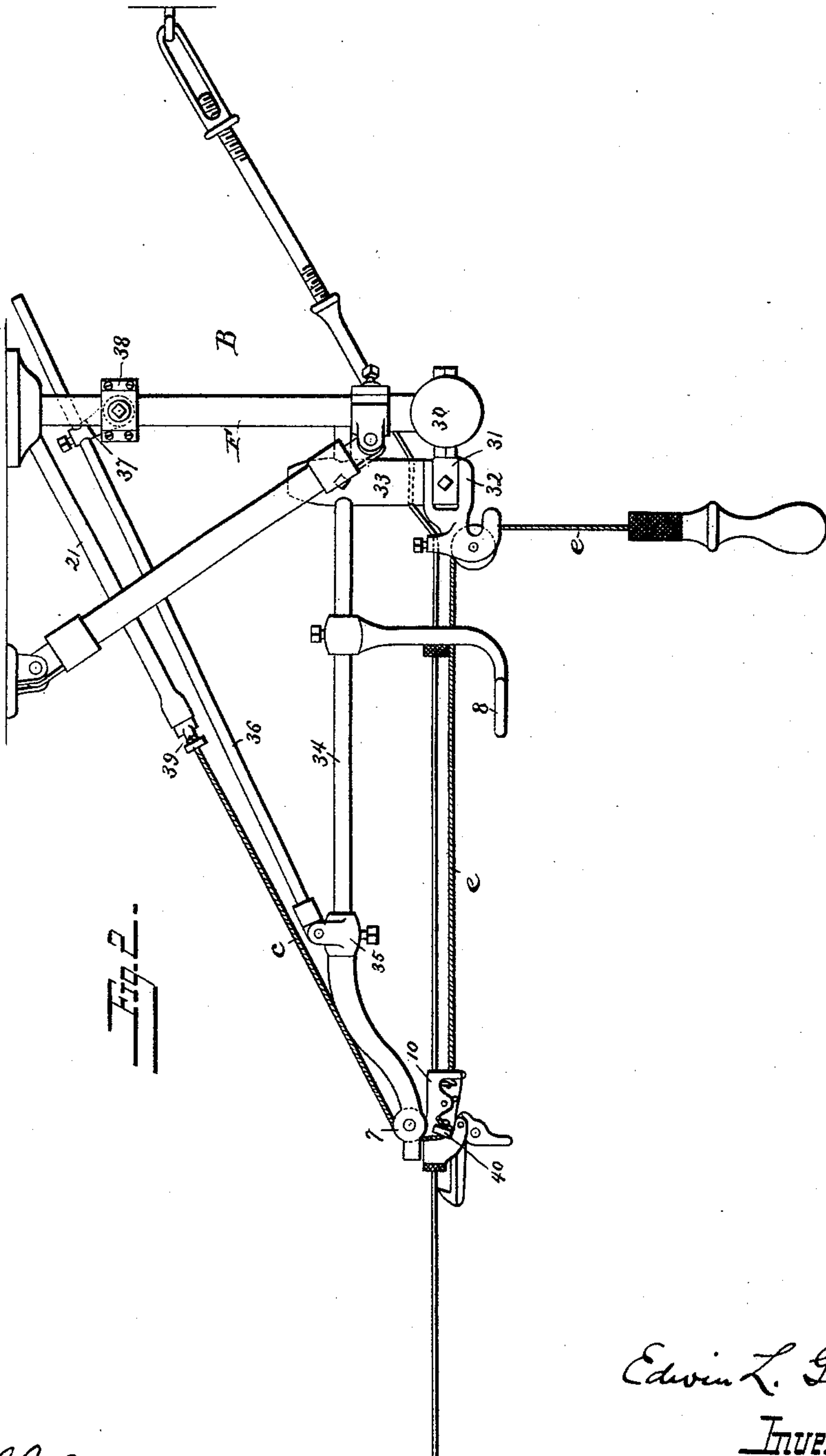


Fig. 2.

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Edwin L. Giles

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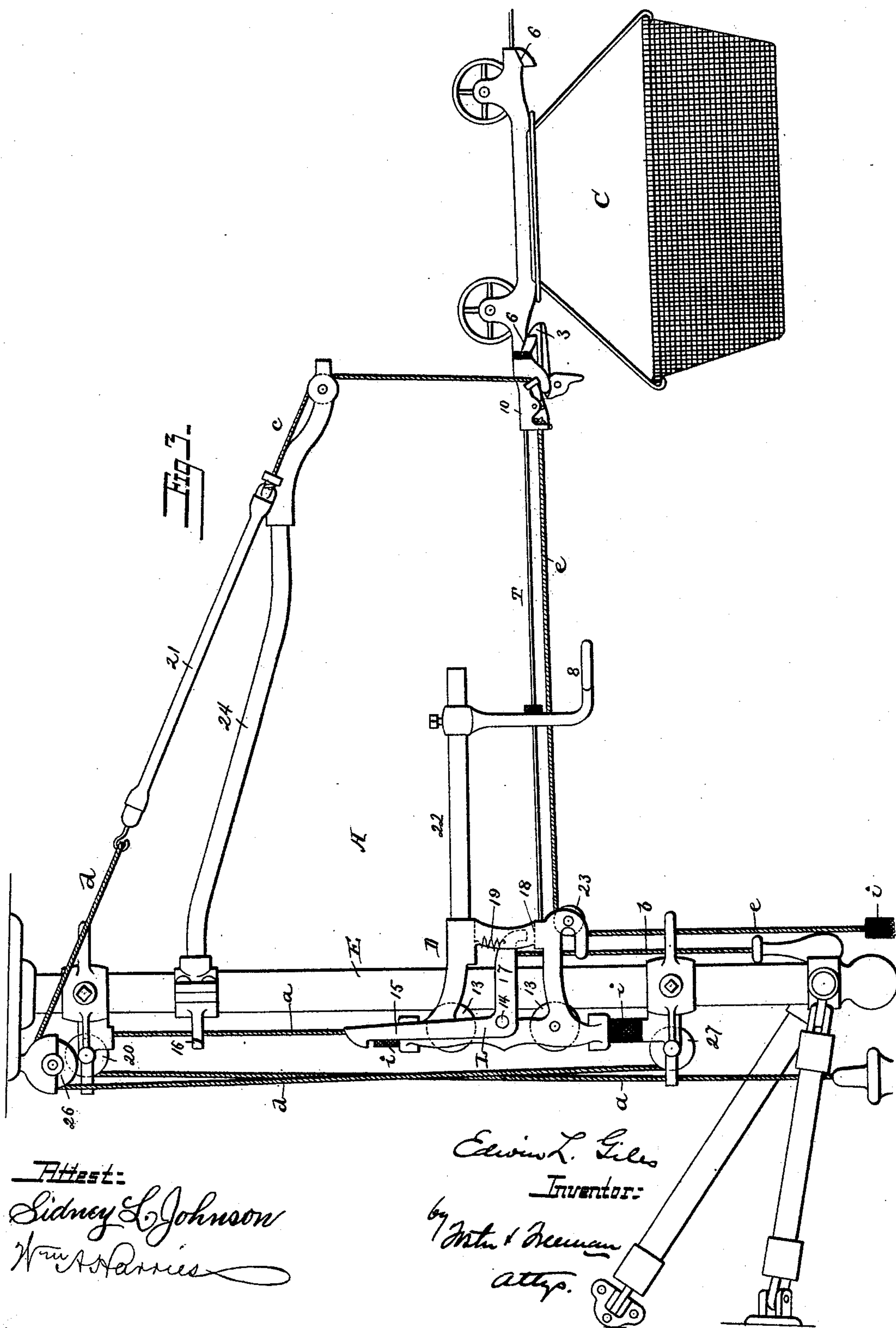
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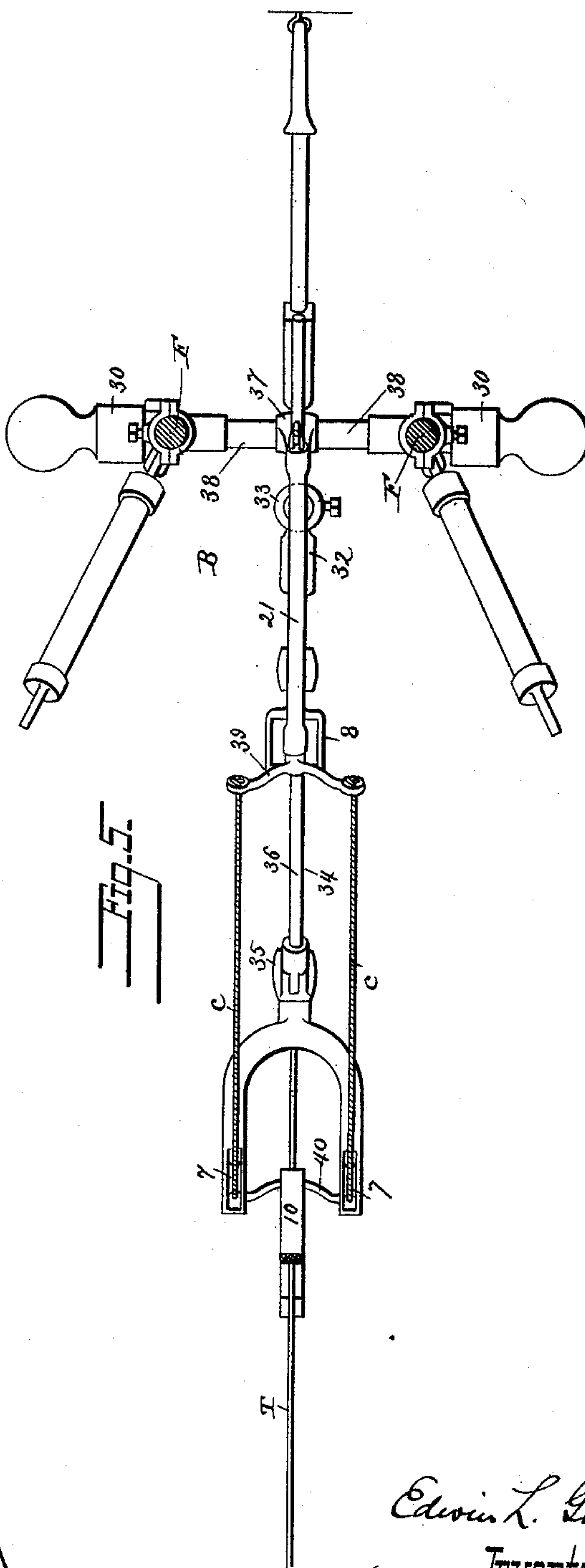
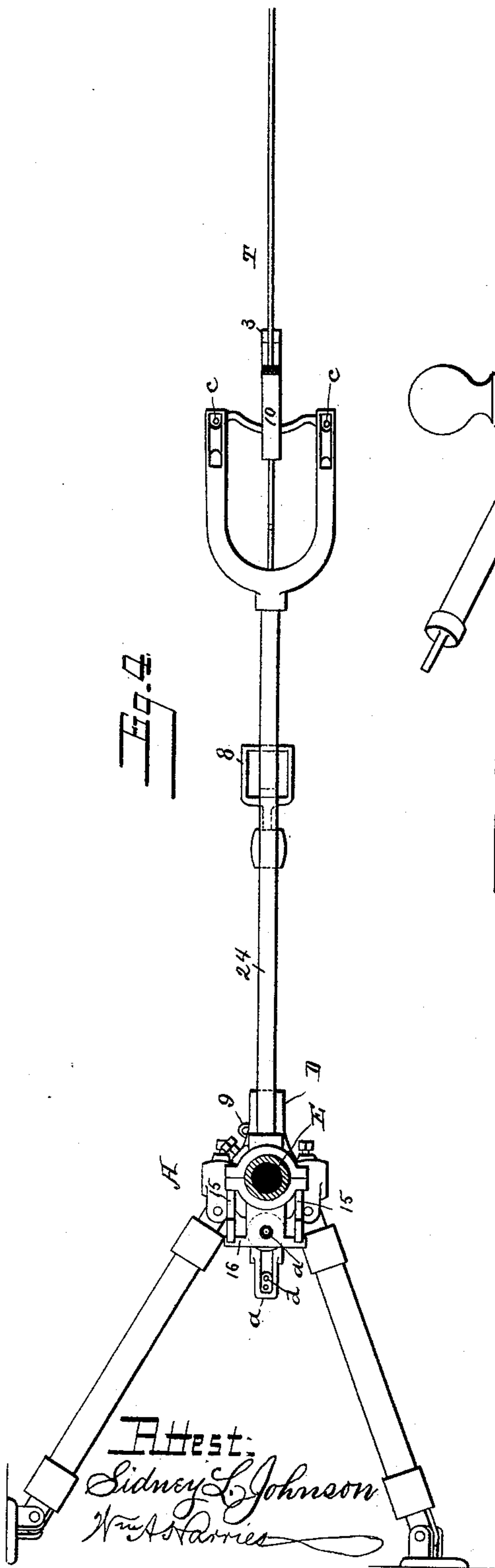
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(No Model.)

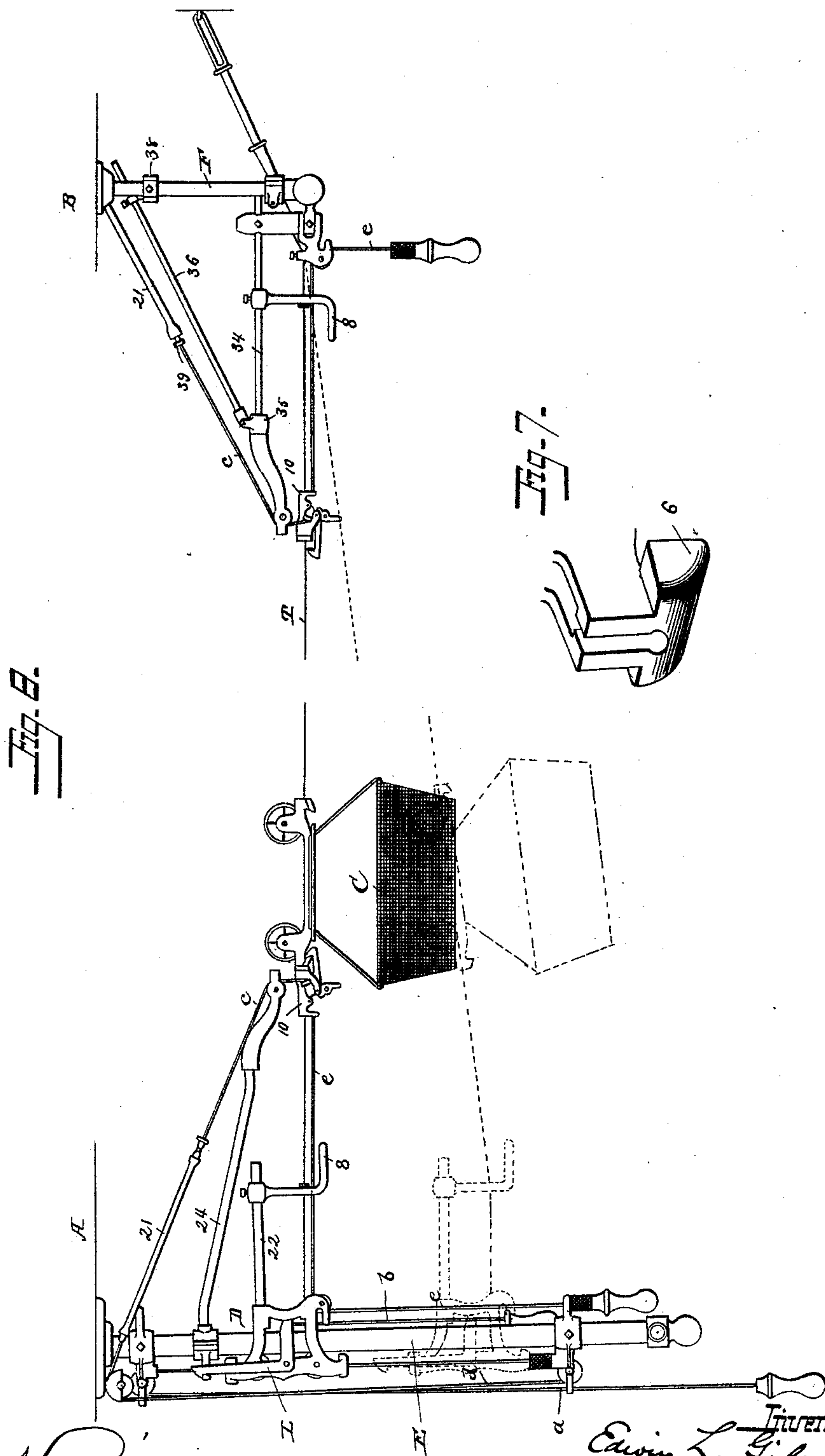
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E. L. GILES.

## STORE SERVICE APPARATUS.

No. 414,152.

Patented Oct. 29, 1889.



Arrest:

Wm. A. Harris  
Sidney L. Johnson

Inventor:

Edwin L. Giles  
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# UNITED STATES PATENT OFFICE.

EDWIN L. GILES, OF LOWELL, MASSACHUSETTS.

## STORE-SERVICE APPARATUS.

SPECIFICATION forming part of Letters Patent No. 414,152, dated October 29, 1889.

Application filed July 13, 1887. Serial No. 244,156. (No model.)

### *To all whom it may concern:*

Be it known that I, EDWIN L. GILES, a citizen of the United States, residing at Lowell, Middlesex county, Massachusetts, have invented certain new and useful Improvements in Store-Service Apparatus, of which the following is a specification.

This invention relates to store-service apparatus—that is to say, to that class of apparatus wherein a traveling carrier is supported by a track formed by a taut wire stretched between distant points, or other way, and over which the carrier travels as it is impelled, forced, or otherwise moved from station to station. In this class of devices, as is well known, the track or way must be supported at such height above the floor as to enable the carrier to be moved back and forth thereon without danger of striking the heads of attendants and other persons. For this reason it happens that the carrier is often located at such height as to take it out of easy reach of the attendant, except the latter be provided with an elevated platform from which to gain access thereto. The use of a platform is exceedingly objectionable in the large majority of cases, and hence it has been proposed in several devices to provide the apparatus with means whereby the carrier may be lowered, (after it has reached and is stopped at its destination,) so that it may be within easy reach of the attendant, from which lowered position it is raised to the track, to be impelled or moved thereon to its other destination.

One of the objects of the present invention is to provide a store-service track or way with means whereby one of its ends may be lowered from a horizontal position, so as to incline the way bodily for its entire extent to bring the carrier temporarily within the reach of the attendant, and also to provide an apparatus employing a carrier-impelling device at one or both ends of the way with means whereby the carrier, upon its arrival at its destination—say, for instance, at the salesman's counter—may be lowered within reach of such salesman without detaching the carrier from the way and the necessity of changing the continuity of the way, and, primarily, without affecting the adjustment of

the carrier-impelling device at such destination.

To this end the invention consists in a novel construction of parts and combinations of devices, too fully hereinafter set forth to need preliminary description.

The accompanying drawings illustrate a practical embodiment of a structure containing the present improvements, in which—

Figures 1 and 2 represent by a side elevation the opposite ends of the improved store-service apparatus. Fig. 3 is a view similar to Fig. 1, showing the way and carrier lowered. Figs. 4 and 5 represent a plan view of the said opposite ends shown in Figs. 1 and 2. Fig. 6 is an enlarged perspective view of the carriage to which one end of the way is secured. Fig. 7 is a perspective view of the end of the carrier-frame. Fig. 8 is a side elevation of a single way of a store-service apparatus upon a smaller scale, illustrating two positions of the way.

Referring to said drawings, it is to be understood that the track T—a wireway—is shown stretched taut between two distant stations A B—say the salesman's counter and the cashier's desk—in such manner that the carrier C may be impelled or moved thereover from one station to the other, and vice versa.

The novel features of a portion of the present invention are illustrated herein in connection with the station A, or the salesman's counter; but it is to be understood that these features, particularly with regard to the lowering and elevating of the carrier, will, for reasons too well known to those skilled in this art to need particularizing, be more generally employed at such station than at the other or the cashier's desk. These features may, however, be employed at either or both ends, as the exigencies of their use may dictate, without modifying or departing from this invention. As shown, this end of the way is secured to a sliding carriage D, suitably supported by a standard or bracket E, that may be secured to the ceiling or other place of the store or warehouse to provide a guide for said carriage. The other end of the way may be similarly supported, or, as shown, be fixedly secured to the wall or other support in any suitable manner.



The sliding carriage D, with its end of the wireway, is adapted to be lowered from the position shown in Fig. 1 to that shown in Fig. 3, and in full and dotted lines in Fig. 8, so as to incline the way bodily from or near the point of its attachment at one end downward to its other end, and thus the carrier C will be brought into such position as to be accessible to the attendant. In order to keep the way T, when of wire, taut, both when the carriage D is in its normal or horizontal as well as in its lowered or inclined position, the supporting standard or bracket E is inclined, as shown, or placed at such an angle with relation to the normal position of the way as to occupy the relation of a chord to the arc of the circle the movable end of the way will travel in being lowered and raised, the other or fixed end of such way being the center from which said arc is described. Thus, as will be readily seen, the tautness of the way will be preserved in either of its positions.

The sliding carriage D (see Fig. 6) consists of a skeleton frame surrounding the supporting-standard and sustaining at the rear of the latter anti-friction wheels 13, which conform to the shape of that portion of the standard over which they travel and bear against it and properly guide the carriage in its lowering and raising movements. The carriage may be sustained in its normal position by any suitable device that can be readily operated to permit it to be lowered. One such device answering the requirements of its use is illustrated. It consists of a bell-crank lever L, of bifurcated or duplex form, straddling the standard and pivoted at 14 to the sides of the carriage, its bifurcated arms 15 being adapted to engage a tongue-piece 16, projecting from the rear of the standard to hold the carriage in position. Said arms 15, after passing the pivot 14, become united in a single arm 17, moving in a recess 18 in the carriage, forming a means for limiting the movement of the lever, and on which a spring 19 may operate to cause the opposite end of the lever to automatically catch the tongue when the carriage is raised to its normal position and fixedly hold it in such position. The carriage and its end of the way may be raised by a cord *a*, secured to the carriage and simply passing over a pulley 20, down within reach of the attendant, and it may be lowered by tripping the lever L from engagement with the tongue 16 by means of a cord *b*, attached at 9 to said lever and also extending within reach of the attendant. This lowering movement of the carriage may be effected after the lever is tripped by making it heavy enough to fall to its lower position by gravity. If the way be stretched so taut that this result will not occur, it may be pulled positively downward, or be aided in such movement by a spring. The catch in some cases may be omitted entirely and the end of the way supported in its horizontal position by a weight, and it may be held down by a catch against said

weight, which catch may be tripped to permit the weight to return the way to its normal position.

The carrier-impelling device H may consist of any of the well-known forms, which in practice must bear such relation to the way that it will always be in position to act upon the carrier as soon as it arrives at its destination.

In apparatus heretofore employing a way the end of which was capable of being lowered and raised with the carrier, the way was raised to such an extent above the normal position thereof as to impart either a sufficient initial gravitating movement to the carrier to cause it to travel to its destination or to so incline the way its entire extent as to cause the carrier to travel by gravity to the end thereof, or until otherwise stopped.

With the means for inclining the way above described the present invention embraces means whereby the change of position of the way will not affect the location of the impelling device with relation thereto nor affect the carrier-stop, the catch, or the tripping device.

The impelling device herein shown consists of a spring 21, against the tension of which the carrier C is drawn until it is suddenly tripped by the catch 3 and stop 8.

The structure and operation of the devices shown need not be particularly described, as the same are fully set forth in an application of James W. Cowley, filed March 2, 1887, Serial No. 229,429, to which reference may be had.

The stop 8 is herein adjustably supported upon an arm 22, projecting from the front of the carriage D, so that it partakes of the movement of the way and its position be adjusted as it becomes necessary to change the force of the impelling-spring 21, as will be readily understood. In order now to permit the impelling device to accommodate itself to the change of position of the way and to preserve the normal tension of the spring 21, one end of said spring, as shown in said application, being connected by a cord *c* to the slide 10, carrying the catch 3, its opposite end, however, instead of being secured to a fixed point, or to a cord, in some instance, extending down within reach of the attendant, as in the patent to Robert A. McCarty, No. 325,425, is connected by a cord *d* to the end of the way, or, as shown, to the carriage D in such manner that in the lowering movement of the latter the spring 21 or impelling device will be permitted to follow such movement without in any manner affecting the tension of said spring or its capacity to propel the carrier in the inclined position of the way, should it be desired to do so, and that when the carriage-way and carrier are raised the impelling device will be automatically returned to its original position, ready to force the carrier forward by drawing upon the cord *e*, as set forth in the aforesaid application, which cord is attached



to the slide 10 and passed over a pulley 23, supported by the carriage D, and downward within reach of the attendant. The horizontal arm 24, having its forward end bifurcated, as common, to guide the cord *c*, is supported in a stationary position from the standard E, but may, if desired, be mounted on the carriage D to move therewith. The connection between the spring 21 and carriage D in the present instance is maintained by attaching one end of the cord *d* to the lower side of the carriage, and thence passing it under a pulley 27 and over a pulley 26 to the spring.

The opposite end B of the way, representing, say, the cashier's desk, is provided with an impelling device H, similar to that just described, although its use is not essential, as any other means for causing the carrier to move over the way from such point may be employed in lieu thereof. This end B of the way, as shown, consists of a horizontal bar 30, supported by brackets F, projecting from the ceiling or other point, and is adapted to sustain one or more arms 31, having an adjustable end piece 32, which may be arranged at such angle to the arm as to correspond with the direction of the way through which and a short post 33 it is passed to be securely fixed and braced to the wall or other suitable support. In passing the adjustable end piece or the post the way may also be secured thereto. The post 33 supports the horizontal arm 34, having its opposite end bifurcated to support the small guide-pulleys 7 for the cord *c* of the impelling device. Near its bifurcated end the arm is provided with a collar 35, adjustably secured thereto, to which is pivoted one end of a brace-bar 36, that extends upward and through a swiveled and adjustably-mounted collar 37, sustained by a cross-bar 38, extending between the two brackets F. This horizontal arm 34 also supports the stop 8, to which it is adjustably secured, which, like its duplicate at the opposite end of the way, operates to trip the carrier from the impelling device and cause it to be released therefrom as it is forced forward. Thus it will be seen that the operating parts of the impelling device and its support may be adjusted with great nicety to suit the many varying conditions which arise in adapting the apparatus to different locations. In this class of impelling devices it has been customary to join the two divisions of the cord *c* together at or near the point of attachment with the spring 21. In so doing the said divisions extended from the guide-pulley 7 in each end of the bifurcation of the arm 34 or 24 at an angle to the movement of the spring, so that the tendency of the cord was to become bound between pulley 7 and its supporting side pieces, or to slip from off the pulley. To overcome this defective working, there is provided a yoke-piece 39, secured to the spring 21, to the extending ends of which the two divisions of the cord are secured, thus extending and guiding them in a

right line from the guide-pulleys to their point of attachment with the spring. When a slide 10 is employed, a similar yoke-piece 40 may be provided for it, and the opposite ends of the cord likewise secured to it, as shown.

The hook formed on the ends of the carrier for holding it at its destination, as heretofore provided, have not been wholly effectual in preventing the accidental disconnection thereof with the holding device or catch during any undue swaying movement of the carrier, and hence is liable to and does cause considerable annoyance and delay when it occurs. To obviate this, the hooked ends 6 of the carrier are extended a distance beyond the sides of the carrier-frame, as shown in Fig. 7, and to such an extent that no swaying movement within one hundred and eighty degrees of a circle will endanger its accidental disconnection from the retaining-catch 3.

The means herein described for retaining the carriage and the way in its horizontal position and lowered to the inclined position may be varied within wide limits. So, too, the fixed end of the way, while being fixed, so far as the end that is moved to incline the way is concerned, might obviously be provided with means for inclining it from that end, in which case, of course, when said end is adjusted the other end would remain in its fixed position. In other words, both ends of the way may be provided with means for adjusting it at either end from a horizontal position to an inclined position.

Instead of employing the particular means, such as the connecting-cord between the carriage and impelling device, for the purposes herein described, it is obvious that the upper end of the impelling device may be connected to an extension of the carriage D, so that they both move bodily together when the position of the way is adjusted.

Many other changes—such as the employment of a different impelling device from that taken for illustration—may be made by an ordinary mechanic without departing from the scope of this invention.

Suitable buffers *i* may be interposed between the contacting portions of the apparatus to limit the movements thereof and to lessen the noise in its adjustments.

What I claim is—

1. The combination of a straight way, a carrier supported thereon, a propelling device movable in a line parallel to the way and supported in a position above and connected with the way, and means for raising and lowering the end of the way, substantially as described.

2. The combination of a way, a carrier supported thereon, a propelling device supported above the way and provided with a slide mounted on the way, and means for raising and lowering the end of the way, substantially as described.

3. The combination, with the standard, a



carriage adjustably mounted thereon and supporting one end of a way, of a carrier-impelling device located at that end of the way, and a connection, such as the cord *d*, between  
 5 the carriage and the impelling device to cause the latter to adjust itself when the position of the carriage is adjusted, substantially as described.

4. The combination of a way, an adjusta-  
 10 bly-mounted carriage supporting one end of the way, an impelling device, also connected to said carriage, and a slide 10, connected to the impelling device and adapted to move with the adjusting movement of the carriage,  
 15 substantially as described.

5. The combination of a way, an adjustably-mounted carriage supporting one end of the way, an impelling device, also connected to said carriage, and a slide 10, connected to  
 20 the impelling device and mounted on the way, to move therewith in the adjusting movement of the carriage, substantially as described.

6. The combination of a way, a support, a carriage adjustably mounted thereon and carrying one end of the way, a rod, as 22, carried by said carriage, and a stop adjustably mounted on said rod, substantially as described.

7. The combination of a way, a support, an  
 30 arm 24, mounted on said support, a carriage adjustably mounted on the support and carrying one end of the way, a stop, as 8, also carried by said carriage, and a carrier-impelling device, substantially as described.

35 8. The combination of a standard, a way, a carriage mounted on the standard and sup-

porting one end of the way, and a bifurcated lever-catch pivoted to the carriage and adapted to straddle the standard, substantially as described.

9. The combination of a way, a bracket, an arm, as 31, supported thereby and having a pivoted end piece to which one end of the way is secured, an impelling device, the horizontal arm 34, providing a guide for one portion of said device and adjustably connected  
 45 to said arm 31, and the adjustable brace-bar 36, substantially as described.

10. The combination of a way, a bracket for supporting one end thereof, an impelling  
 50 device, the horizontal arm 34 and pivoted brace-bar 36, and the adjustable supports 35 37, substantially as described.

11. The combination of the pulleys 7, slide 10, propelling-cord, and the yokes 39 40, substantially as described.

12. The combination of a way, a carrier supported thereby, propelling-cord C, a propelling-spring, and a yoke 39, connecting the cords to the spring, substantially as described.

13. The combination of the pulleys 7, propelling-cords passing thereover, a propelling-spring, and a yoke 39, connecting the ends of the cords to the spring, substantially as described.

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

EDWIN L. GILES.

Witnesses:

E. F. ENDICOTT,  
 J. G. RUSSELL.