

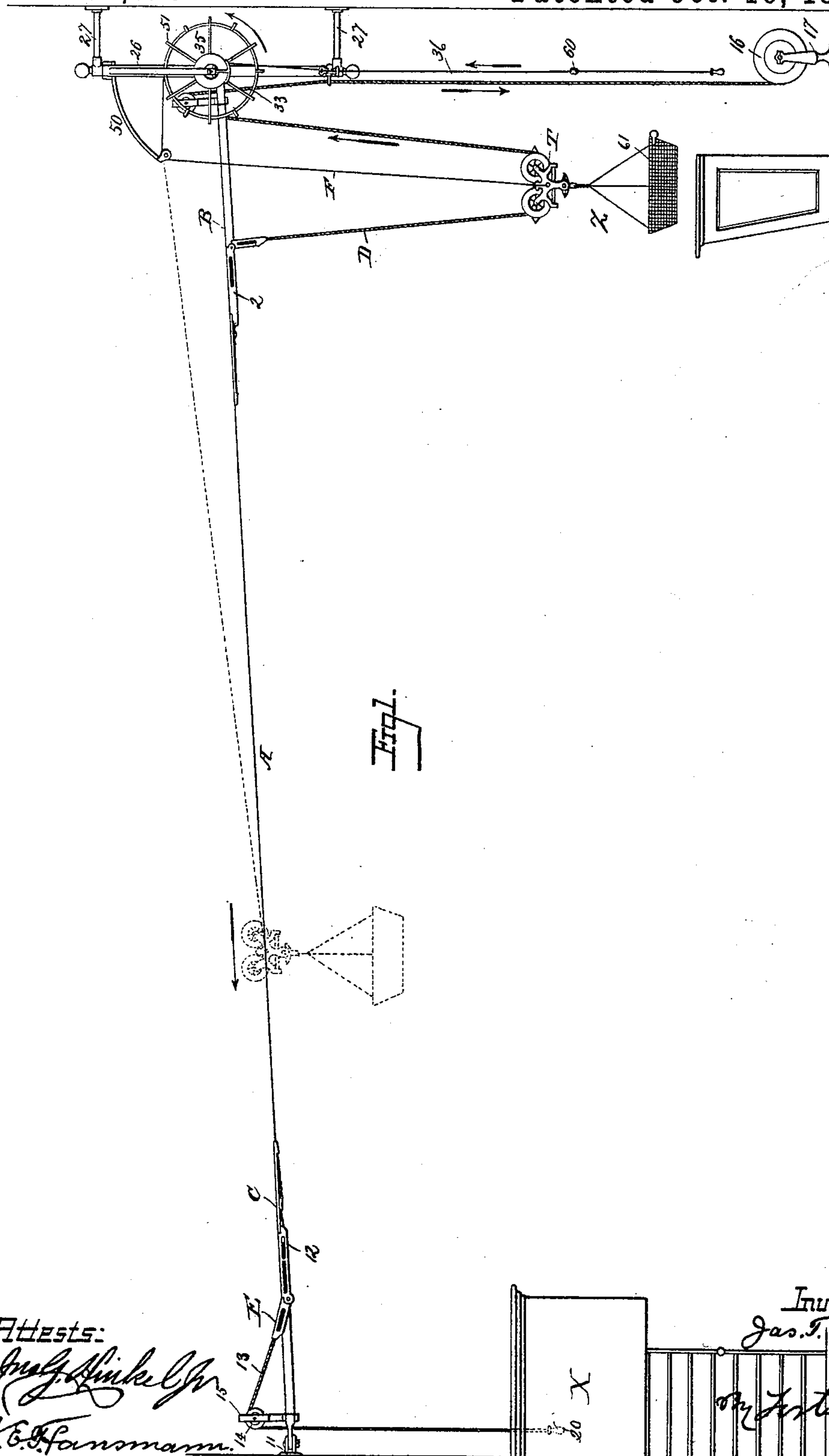
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6 Sheets—Sheet 1.

J. T. COWLEY.
STORE SERVICE APPARATUS.

No. 391,026.

Patented Oct. 16, 1888.



Witness:

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A. C. Farnsworth

Inventor:

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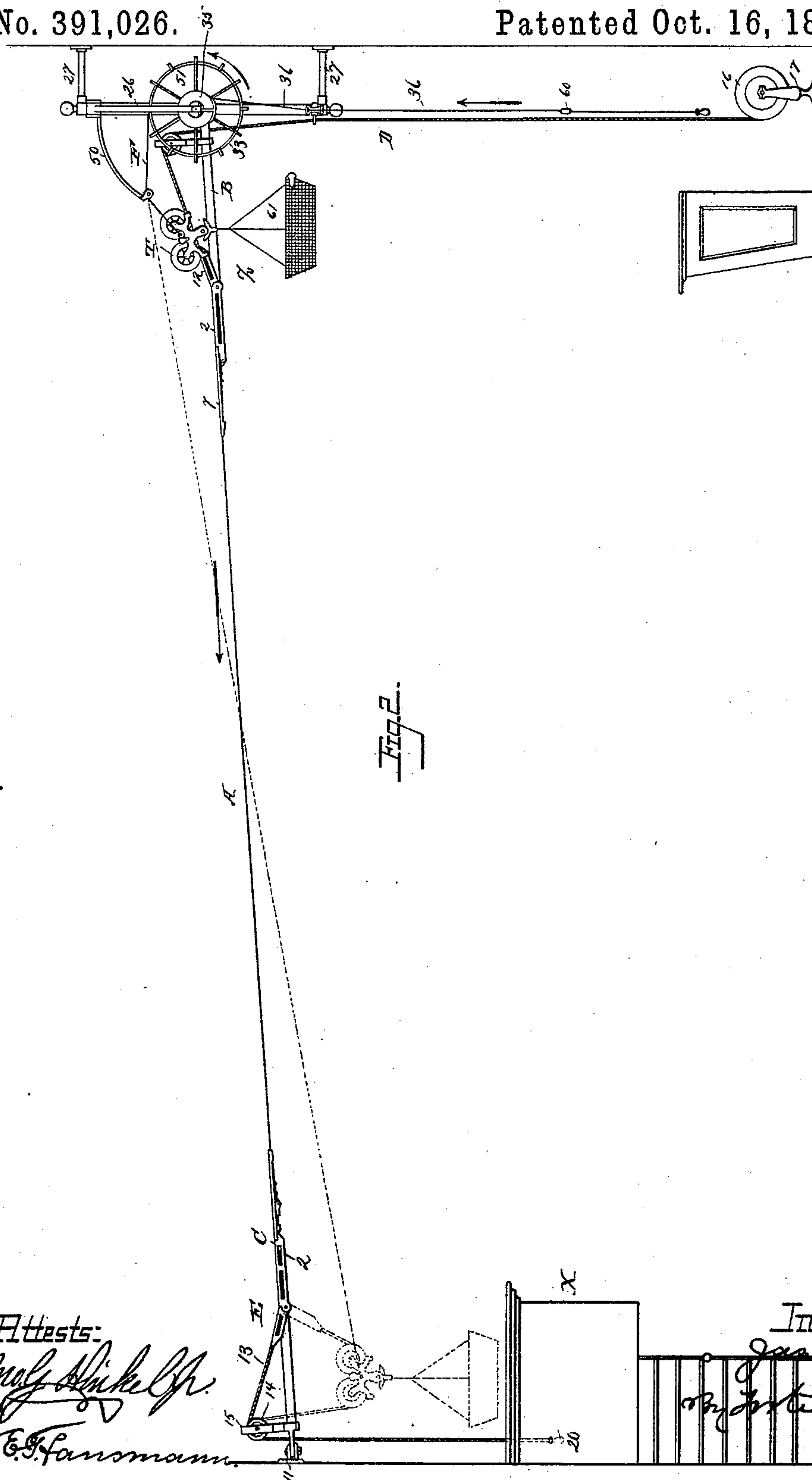
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J. T. COWLEY.
STORE SERVICE APPARATUS.

No. 391,026.

Patented Oct. 16, 1888.



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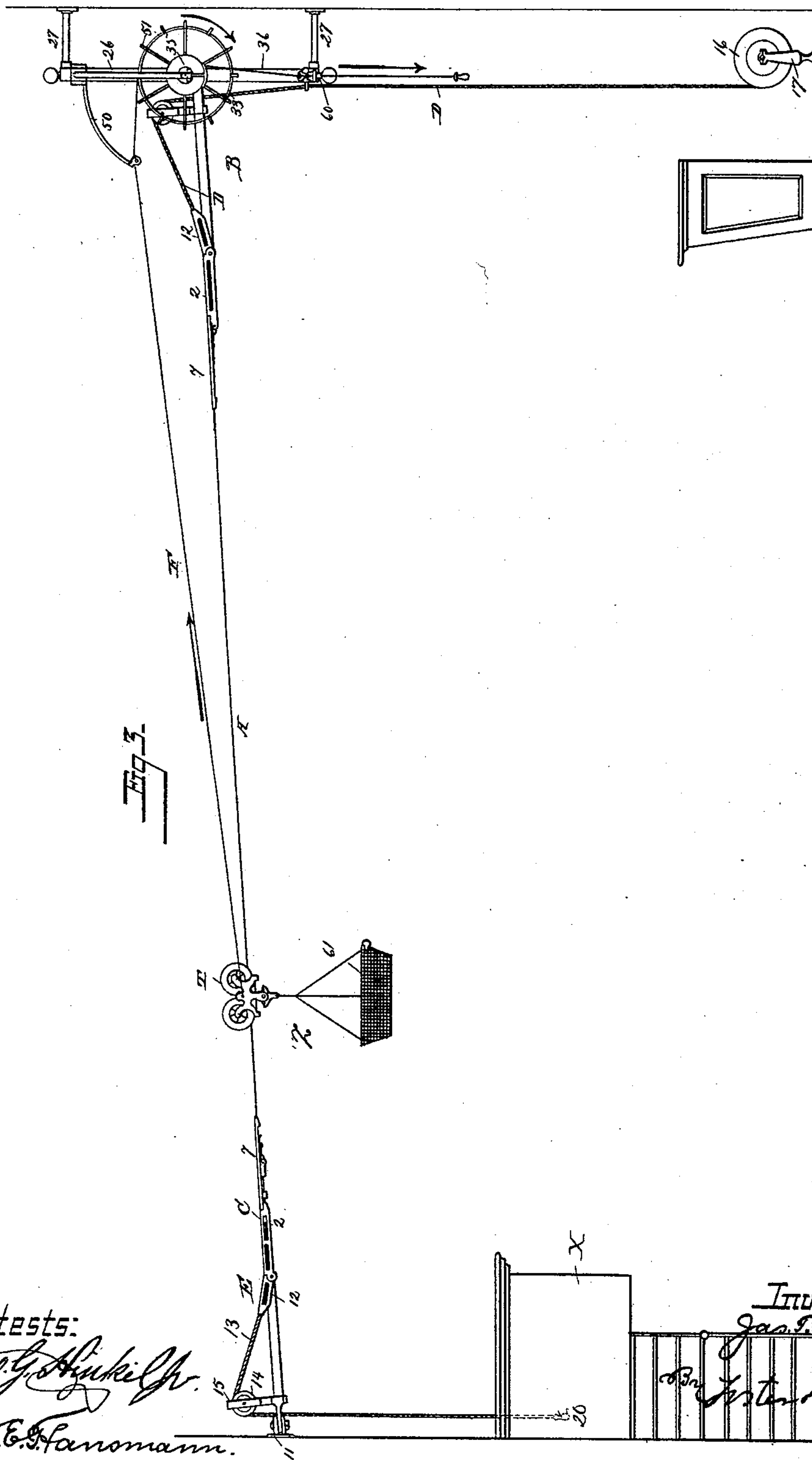
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J. T. COWLEY.
STORE SERVICE APPARATUS.

No. 391,026.

Patented Oct. 16, 1888.



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6 Sheets—Sheet 4.

J. T. COWLEY.
STORE SERVICE APPARATUS.

No. 391,026.

Patented Oct. 16, 1888.

Fig. 4.

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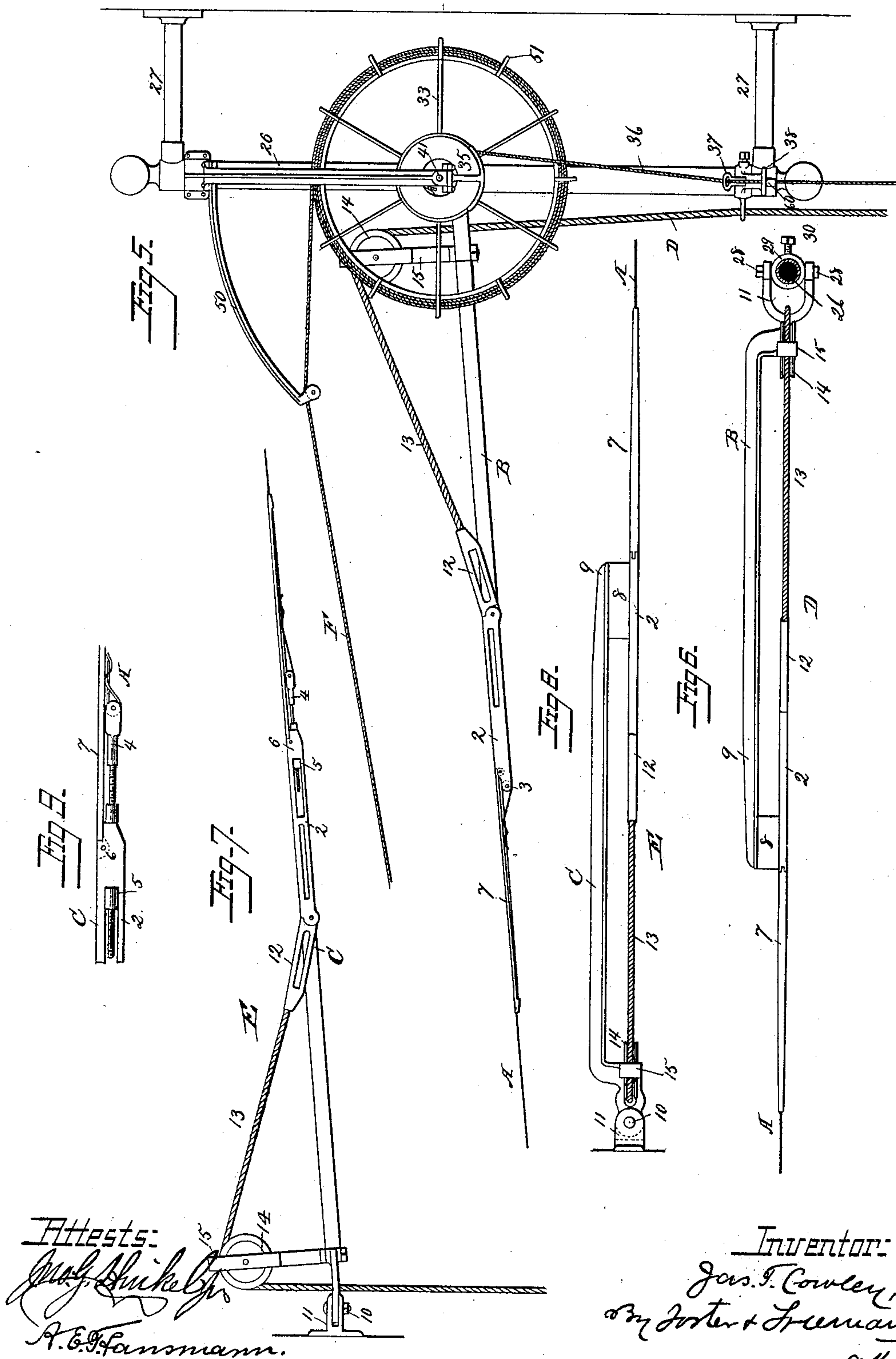
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J. T. COWLEY.
STORE SERVICE APPARATUS.

No. 391,026.

Patented Oct. 16, 1888.



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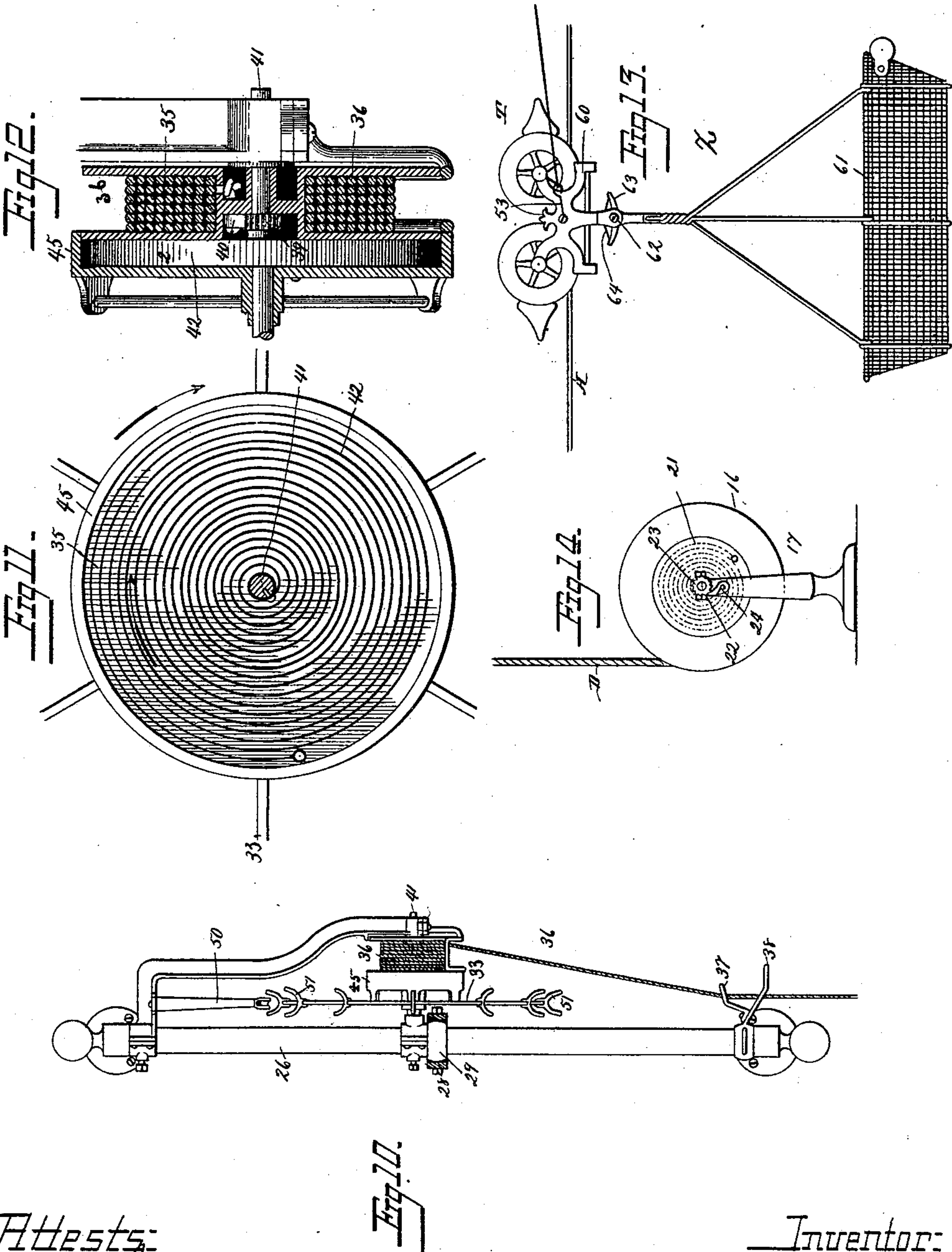
(No Model.)

6 Sheets—Sheet 6.

J. T. COWLEY.
STORE SERVICE APPARATUS.

No. 391,026.

Patented Oct. 16, 1888.



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UNITED STATES PATENT OFFICE.

JAMES T. COWLEY, OF NEW YORK, N. Y., ASSIGNOR TO THE LAMSON
STORE SERVICE COMPANY, OF SAME PLACE.

STORE-SERVICE APPARATUS.

SPECIFICATION forming part of Letters Patent No. 391,026, dated October 16, 1888.

Application filed July 17, 1886. Serial No. 208,295. (No model.)

To all whom it may concern:

Be it known that I, JAMES T. COWLEY, a citizen of the United States, and a resident of New York, county of New York, State of New York, have invented certain new and useful Improvements in Store-Service Apparatus, of which the following is a specification.

My invention relates to that class of store-service apparatus in which cars travel back and forth upon wires or ways of light material; and my invention consists in means, fully set forth hereinafter, for actuating the cars upon the ways and for facilitating access thereto, and for increasing the efficiency of the cars.

In the drawings, Figure 1 is a side elevation illustrating my improvement in connection with the inclined way of a store service apparatus. Figs. 2 and 3 are views the same as Fig. 1, showing the parts in different positions. Fig. 4 is a plan of the apparatus; Fig. 5, an enlarged view showing the devices for winding the draft-cord and the parts adjacent thereto. Fig. 6 is a plan of the yoke and connections shown in Fig. 5; Fig. 7, an elevation of the rope and connections at the opposite end of the way; Fig. 8, a plan of Fig. 7; Fig. 9, an enlarged view illustrating the way-tightening device; Fig. 10, an edge view of the devices shown in Fig. 5; Fig. 11, a side view of the central portion of the reel, showing the winding-spring and reel-shaft in section. Fig. 12 is a transverse section through the hub of the reel and drum. Fig. 13 is a side elevation of the car upon the way. Fig. 14 is a side elevation of the elevator-wheel.

The cars Z have each two grooved wheels and travel on an inclined way, A, of wire or other suitable material, and are raised onto and taken from the ends of the way by means of elevators D E, cord, straps, or other flexible material. As the way must be stretched taut and its ends must be open or exposed to permit the cars to be removed and replaced, I support the termini by metal yokes B C—the latter at the cashier's desk and the former at the salesman's station—and each yoke has a thin bar, 2, to which the end of the wire is connected, and which constitutes practically one end of the way. One end of the wire is secured to the bar 2 of the yoke B by being passed round

a cross piece or pin, 3, of said yoke and twisted on itself, (see Fig. 5,) and the other end of the wire is secured in the eye of a screw-rod, 4, which passes through a lug or cross-piece, 6, of the bar 2 of the yoke C and carries a nut, 5, which, bearing on the lug 6, serves as a means of tightening the wire.

As the connections described leaves shoulders between the wire and each bar, I hinge to the inner end of each bar a tapering metal rod or finger, 7, which coincides at its hinged end with the top edge of the bar 2 and tapers gradually to its extreme end, where there is a longitudinal opening for the passage of the wire, with which the upper edge of the finger is then brought to coincide, thus securing a gradual passage from the wire to the bearing-face of each bar 2. The bar 2 of each yoke is supported upon a lug, 8, extending laterally from the back bar, 9, of the yoke, and the latter has a terminal eye for jointing the yoke by a vertical pin, 10, to a bracket, 11, for attachment to a suitable support, this hinged connection permitting the attachment to faces or supports not at right angles to the line of the way, the yokes swinging to whatever angle the direction of the way may render necessary, regardless of the position of the supporting-bracket.

To each end of the way—that is, to the outer end of each bar 2—is connected by a hinged metal link, 12, the cord 13 of the flexible elevator, said cord extending in line with the way over a pulley, 14, supported by a bracket, 15, on the yoke in a position above the level of the way, and thence extending downward. At the cashier's desk X the cord 13 has a handle, 20; but at the salesman's station the cord extends to a drum, 16, turning in a bracket, 17, secured to the floor or other support. The car passes onto the cord, which sinks in the form of a loop, permitting the descent of the car, and at the salesman's station the drum 16 is connected to a spiral spring, 21, (see Fig. 14,) also attached to the shaft 22 of the drum, so that the descent of the car will be gradually resisted and finally arrested without shock. To permit the resistance to be regulated, the shaft 22 is provided with a ratchet-wheel, 23, which engages with a pawl, 24, that normally prevents the shaft from turning, but may be withdrawn to permit the shaft to be turned by

hand to apply any desired tension to the spring.

When the car is to be restored to the wire, the vertical portion of the cord 13 is drawn
5 downward until the cord extends in an inclined path from the pulley 14 to the way, and the car will then roll downward to the way.

The way is inclined downward from the salesman's end toward the desk X, and, as
10 shown, the yoke B is secured to a vertical bar, 26, supported by brackets 27 27, the bracket 11 at this point being forked to receive screw-pins 28, which joint it to an adjustable sleeve,
15 29, sliding on the bar 26, and secured after adjustment by a set-screw, 30. After the car has been elevated at the salesman's station it passes onto the way and runs by gravity to the other end of the way and onto the cord 13
20 of the elevator at the cashier's desk, with which it descends. The carrier, however, must be propelled by power up the way toward the salesman's station, but travels without resistance in the opposite direction. I therefore connect it to a cord, F, which may be manipulated by the salesman to draw back the car.
25 In carrying out this part of my invention I provide means whereby the draft on the cord F and the return motion of the car is effected by a spring controlled by the salesman, but
30 having no action on the opposite travel of the car. One means of thus operating the car consists in winding the cord F on a reel, 33, which turns in the direction of the arrow, Fig. 1, to permit the cord to pay out when the car
35 descends and carries with it a drum, 35, on which is wound a hand-cord, 36, extending through eyes or guides 37 38 to the salesman's position.

The drum 35 turns freely in one direction on
40 the shaft 41 of the reel 33; but the shaft 41 is provided with one part of a clutch, (represented by a ratchet, 39,) which is engaged by the other part of a clutch (represented by a pawl, 40) on the drum, so that the latter will be turned
45 with the shaft when the reel revolves in the direction of its arrow, Fig. 1. The reel is not fixed to the shaft 41, but is connected thereto through the medium of a spiral spring, 42, attached at one end to the shaft and at the other
50 to the reel, which is formed with a hollow hub, 45, to incase the spring. The spring is coiled so as to be wound up when the shaft 41 is turned in the direction of its arrow, Fig. 11, and this is effected by drawing down the cord
55 36. The cord 36 is pulled upon when the car is at the cashier's end of the way, after the cashier has elevated it onto the way, and the revolution of the drum thus winds up the spring 42, which in unwinding automatically
60 turns the reel 33, and thereby winds up the cord F and draws the carrier positively to the salesman's end of the way.

As the diameter of the drum is much less than that of the reel, only a comparatively
65 short pull on the part of the salesman is required to wind up the spring 42 sufficiently to

draw back the car, while, as the drum turns freely with the reel, it offers no resistance to the reverse movement of the latter as the car descends, the hand-cord 36 being then wound
70 upon the drum prior to the latter being again turned to effect another return movement.

To prevent the cord F sagging below the way, it is conducted through a guide eye at the end of a guide-arm, 50, and to reduce weight and
75 friction the reel is made of light radial arms, preferably of wire, meeting a wire rim from which extend transverse curved horns 51, which receive and hold the cord.

The cord F is secured to the frame T of the
80 car Z through the medium of a link or loop, 53, Fig. 13.

When the car reaches the cashier's desk, it descends upon the loop of rope 13 at that point to the position shown in Fig. 2, dotted lines,
85 the draft-cord F descending with it without interfering with any of the parts of the apparatus or danger of becoming entangled either in the descent or when the car is again elevated prior to its return.
90

By the arrangement above described the car is driven by gravity in one direction and is moved by a draft-cord in the opposite direction—travels upon an elevated way—yet can be readily moved downward into positions accessible to the attendants and as readily elevated
95 and put upon the way. It will also be seen that as but a slight movement is required to wind up the actuating-spring the salesman can by a single short pull of the cord 36 secure the complete return movement of the car. To properly define the movement of the cord 36, and also relieve the salesman of the necessity of maintaining constant hold of the cord 36, I provide means for retaining the latter after it
105 has been pulled to wind up the spring. Thus the cord has upon it a stop or knot, 60, which may be caught beneath a shoulder formed by a slot in the guide 38 when the cord has been drawn down sufficiently to wind up the spring.
110 When the car is to descend, the cord is swung laterally to carry the stop away from the shoulder, when the cord can pass up freely onto the drum as the latter revolves.

The actuating-spring 42 may be upon a drum
115 arranged upon the floor, wall, or other support, and it may be concealed beneath the floor or back of the wall. The reel may be vertical or horizontal, or a cord and weight may be substituted for the spring, and in some
120 instances, especially when the travel of the car is short, the reel and drum and cord 36 may be used without any spring, the downward motion of the cord as it is drawn by the salesman effecting the desired revolution of
125 the reel to draw the car up its incline.

By inclining the way in one direction I avoid the necessity of the salesman's maintaining attention to the apparatus after the car is elevated, and by the use of a draft-cord and positive cord winding or drawing mechanism I secure the immediate and quick return of the
130

car when desired, and these effects are secured without any change in the position of the way, which is fixed permanently in its position. I have shown flexible rope elevators in this connection; but any other desirable construction of device for elevating and conveying the cars may be employed. When the way is suspended low, the elevators may be dispensed with.

It will be evident that the way may be inclined downward from the cashier's desk, in which case the winding device is actuated by the cashier or other attendant.

It will be seen that when the elevators are used it is not necessary for the salesman to wait until the cashier is prepared in order to secure the proper return of the car, inasmuch as the elevator at the cashier's desk acts as a detent to prevent the return of the car after it has left the way A, (shown in dotted lines, Fig. 2,) so that the salesman can then at once wind up the actuating-spring of the winding device, after which the car will at once be drawn upward as soon as it is restored to the lower end of the track. When elevators are not used, any other suitable catch or detent to hold the car at the lower end of the way until the cashier or other attendant is ready to forward it may be used—as, for instance, the catch or detent shown in patent to Hayden, No. 304,317.

The car may be of any suitable construction. As shown, it consists of a frame, 60, hanging from the grooved wheels, and a receptacle, 61, hung from the frame.

In order to avoid the shocks and strains resulting from the sudden arrest of the car, I hinge the receptacle to the frame, and to normally maintain the proper relation of the two I use a spring or springs, which must be compressed to permit any vibration of the receptacle and restore the latter to position.

One form of construction, as shown, consists in pivoting the receptacle-frame to the wheel-frame by a transverse pivot, 62, and in providing the receptacle-frame with longitudinal ears 63, upon which bear the ends of a bow-spring, 64, secured to the frame of the car. The spring tends to maintain the receptacle directly below the car-frame and to hold it stationary thereto; but when the frame of the car is suddenly arrested the receptacle and its frame can swing without straining any part except the spring, which yields, and after the effects of the shock have ceased restores the parts to their normal position.

It will be seen that some of the devices described can be used in connection with different forms of store-service apparatus—for instance, the reel, actuating-spring or its equivalent, and drum and cord; or parts of this combination may be used when the wire is level, a cord-winding device and actuating-spring being used at each end with two draft-cords, so the winding reels and drums and cords can be used with a horizontal way and

elevator at each end whether actuating-springs are used or not.

In some cases the ways may be in curved lines, the draft-cords acting to pull the cars positively in one or both directions. One of the ways is shown as curved in Fig. 4.

Without limiting myself to the precise construction and arrangement of parts shown, I claim—

1. The combination of the way, an elevator at each end, a car, a draft-cord connected to said car, a reel upon which said cord winds, a drum, and actuating-cord, substantially as described.

2. In a store-service apparatus, an inclined way combined with car-elevators at the ends, a car upon the way, a draft-cord attached to the car, a spring for drawing upon the cord, and a drum and actuating-cord for compressing the spring, substantially as described.

3. The combination, in a store service apparatus, of a way, a car adapted to travel thereon, a reel, a draft-cord extending from the latter to the car, a spring connected to the reel, said reel turning freely in one direction to permit the car to travel free of the tension of the spring in one direction, and a drum and actuating-cord to compress the spring to wind up the draft-cord to carry the car along the way in the reverse direction, substantially as described.

4. The combination of a way, a car, a draft-cord attached to the car, a reel for said cord free to rotate in one direction, a spring forming a motor for the reel to automatically rotate said reel in the opposite direction to wind up the cord to carry the car along the way, and a drum and actuating-cord connected with said spring, whereby the attendant may place the spring under tension to draw upon said draft-cord, substantially as described.

5. The combination of the inclined way, a car, a draft-cord connected with the car, a reel receiving said cord, and a drum connected with the reel and turning independent thereof in one direction and provided with an operating-cord, substantially as described.

6. The combination of an inclined way, a car, a cord connected thereto, a reel receiving said cord and free to rotate in one direction independent of the force of the motor, a spring forming the motor for operating said reel, a shaft to which one end of the spring is connected and adapted to rotate with the reel in one direction, and a drum and actuating-cord independent of the reel, whereby the attendant can at will wind up the spring to put the reel in operation, substantially as described.

7. The combination of the way and car traveling thereon, a reel carrying a cord connected to said car and supported to turn without resistance to the outward movement of the car, a spring, and a spring-winding drum accessible to the operator, and a clutch connecting the spring and its winding-drum and permitting the reel to rotate independent thereof

when the spring is put under tension, substantially as set forth.

8. The combination of a way, a car, a draft-cord connected with the car, a reel at one end of the way receiving said cord, a drum connected with the reel and turning independent thereof in one direction and provided with an operating-cord, and an elevator for the car at the opposite end of the way, substantially as described.

9. The combination of the way, a car, a draft-cord, a winding-reel, as 33, carrying a winding or actuating spring, a drum, a cord connected to the drum and independent of the car and accessible to the operator, whereby the spring may be wound to operate the winding-reel, and a shaft common to the reel, spring, and drum for supporting the same, substantially as described.

10. The combination of the way, a car, a draft-cord, a reel, 33, a shaft supporting the same, a spring secured to the shaft and connected to turn freely with the reel as the car descends, a drum, and an operating-cord accessible to the operator, whereby to turn the drum to put the spring under tension to reverse the movement of the reel, substantially as described.

11. The combination of the way, a car, a draft-cord, an elevator at the lowest end of the way, and a reel, 33, and actuating-spring connected to turn freely with the reel in one direction, and a spring-winding drum accessible to the attendant, whereby the spring may be wound up to retract the car independent of its forward movement, substantially as set forth.

12. The combination of the way, a car, a draft-cord, a reel, an actuating-spring, and a guide to direct the cord to the reel, substantially as set forth.

13. The combination, with the way and elevator, a car, a draft-cord, and reel, as 33, for receiving the cord, of a guide, 50, directing the cord in respect to the way and elevator, substantially as set forth.

14. The combination of the reel, as 33, a car, a draft-cord, the drum and its operating-cord, a shaft connected to the reel and supporting

the drum and provided with a ratchet, a pawl upon the drum engaging with the ratchet, and an actuating-spring connected to the shaft and the reel, substantially as set forth.

15. The combination of a reel, 33, having a hollow hub containing a spring connected to the reel and to the reel-shaft, a spring-winding drum carried by said shaft, and an operating-cord upon the drum, substantially as set forth.

16. The combination of the way, car, and draft-cord F, and a reel receiving the draft-cord, a drum carrying an operating-cord, both supported loosely on the shaft, a spring connected at one end to the shaft and at the other to the reel, and a clutch between the drum and shaft, whereby the latter is revolved to wind up the spring when the drum is rotated by means of its cord, substantially as set forth.

17. The combination of the reel 33, a drum and shaft, a spring connected to the reel and shaft, whereby the drum turns independently of the reel to wind up the spring, and a clutch to hold the drum after the spring has been wound up, substantially as set forth.

18. The combination, with the reel, drum, spring-connection, and cord 36, of a stop, 60, upon the cord and a shoulder arranged to be engaged by said stop to limit the upward movement of the cord, substantially as set forth.

19. The combination, with the car-frame, of a receptacle suspended below the same, a transverse pivot, 62, and springs arranged to resist the swinging motion of the receptacle upon its pivot, substantially as set forth.

20. The combination, with the car-frame provided with springs, of a receptacle-frame pivoted to the car-frame, provided with projections upon which the springs bear at opposite sides of the pivot, substantially as described.

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

JAMES T. COWLEY.

Witnesses:

C. W. LOCKE,
F. A. SPEAR.