(No Model.)

2 Sheets—Sheet 1.

C. W. ELLIOTT.

STORE SERVICE APPARATUS.

No. 374,295. Patented Dec. 6, 1887.

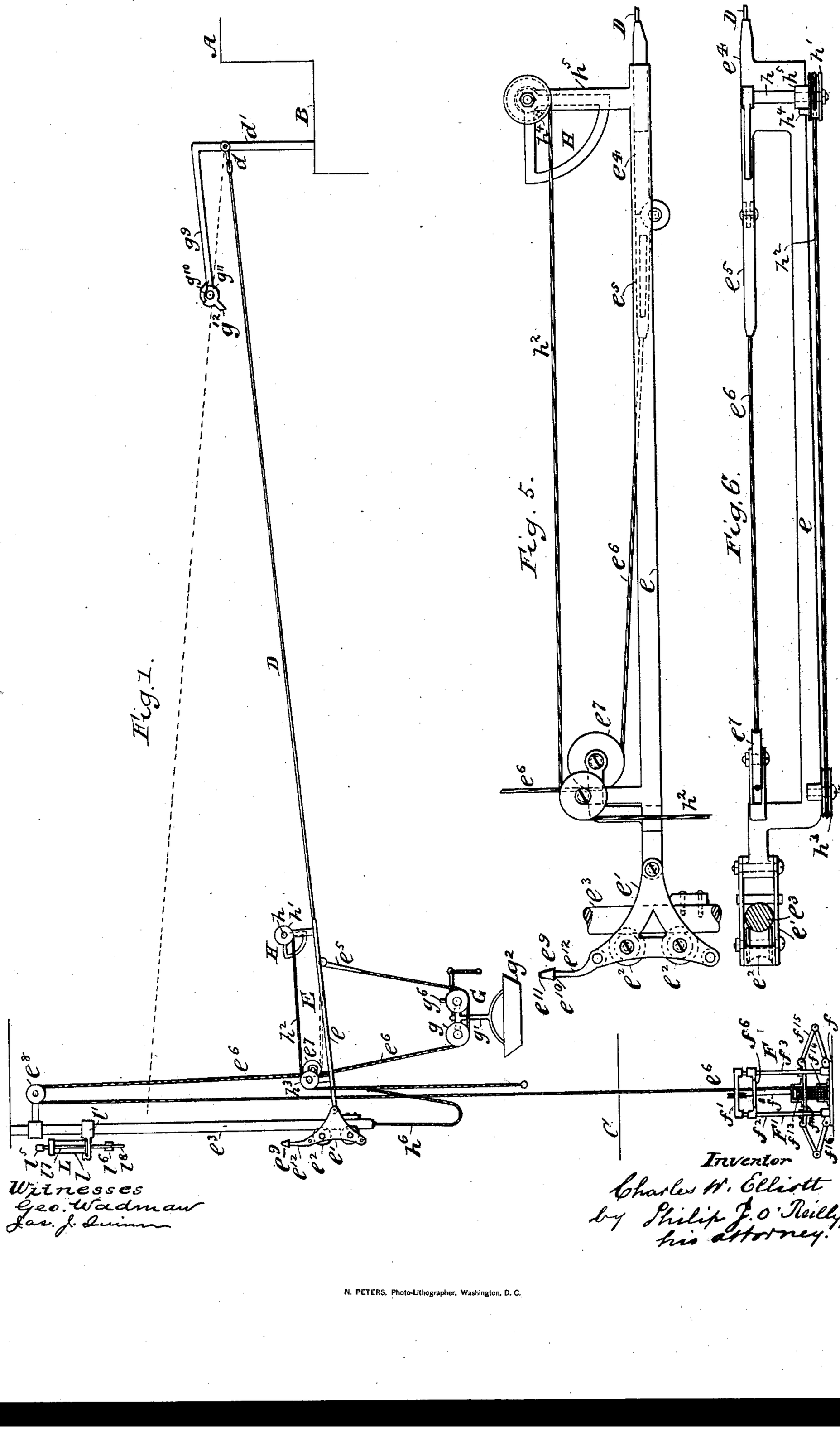

Fig. 1.

Fig. 5.

Fig. 6.

Witnesses
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Inventor
Charles W. Elliott
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(No Model.) 2 Sheets—Sheet 2.

C. W. ELLIOTT.

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Fig. 7.

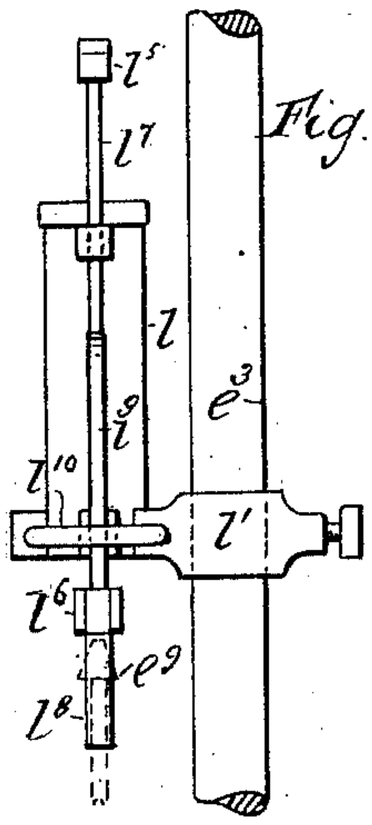


Fig. 8.

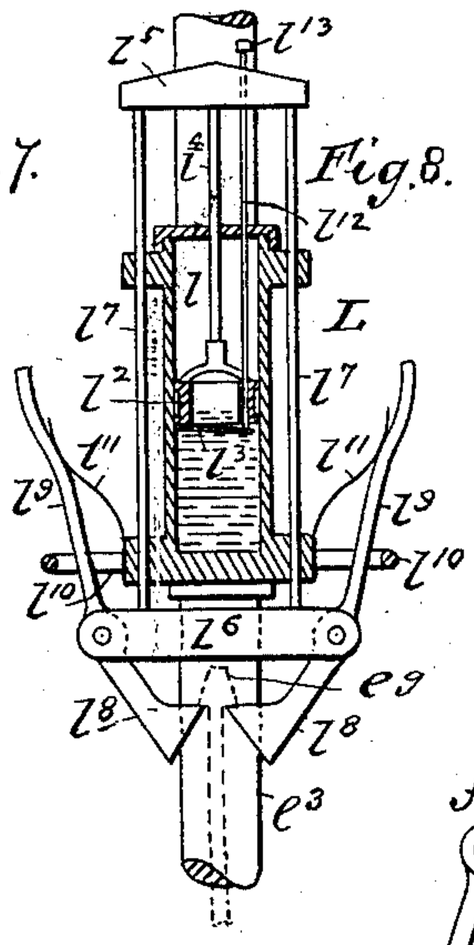


Fig. 4.

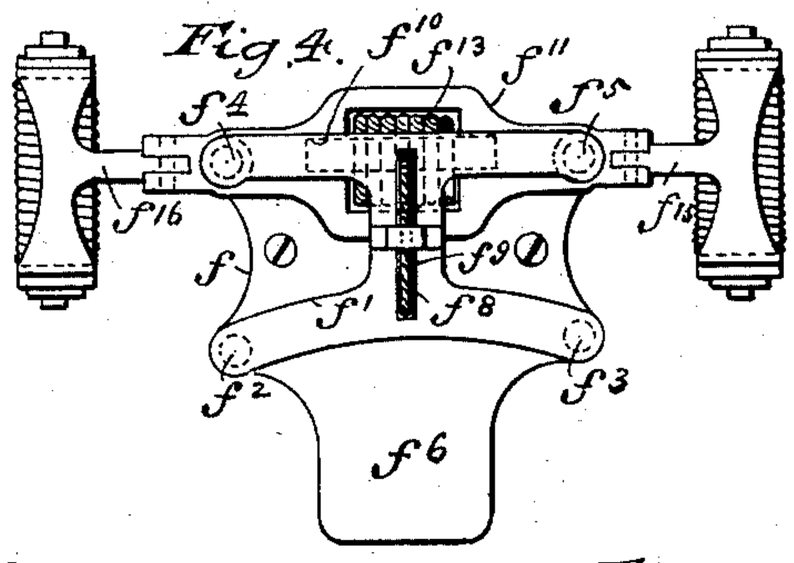


Fig. 2.

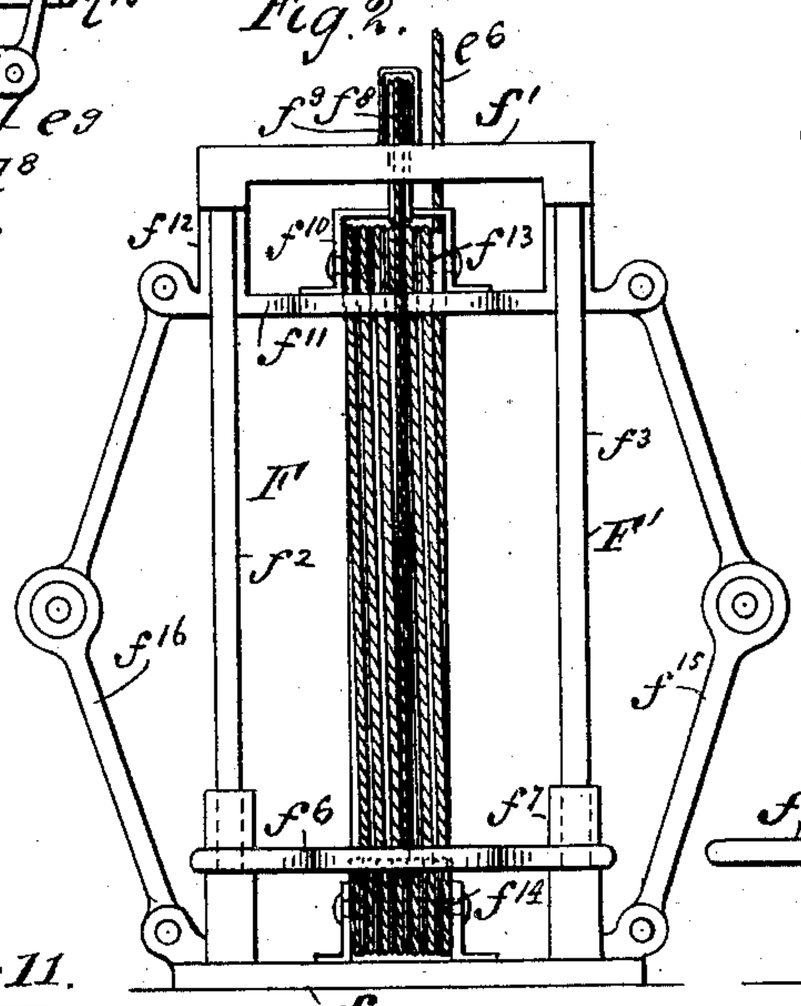


Fig. 3.

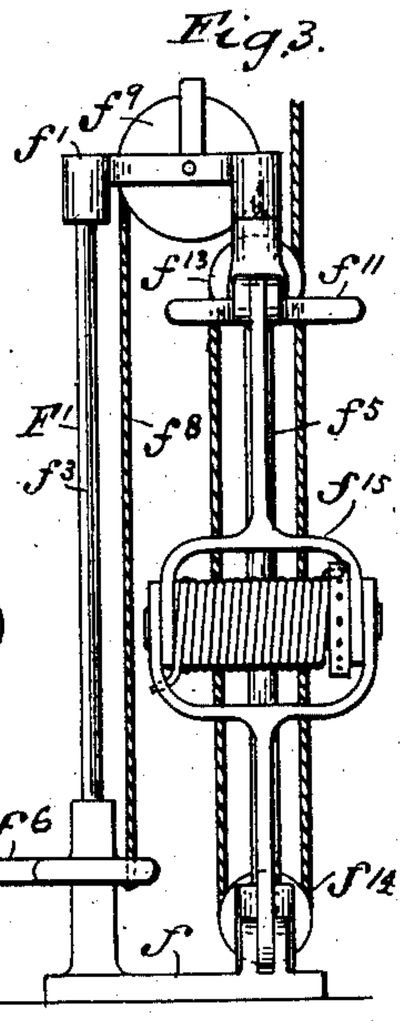


Fig. 11.

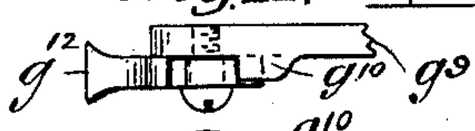


Fig. 9.

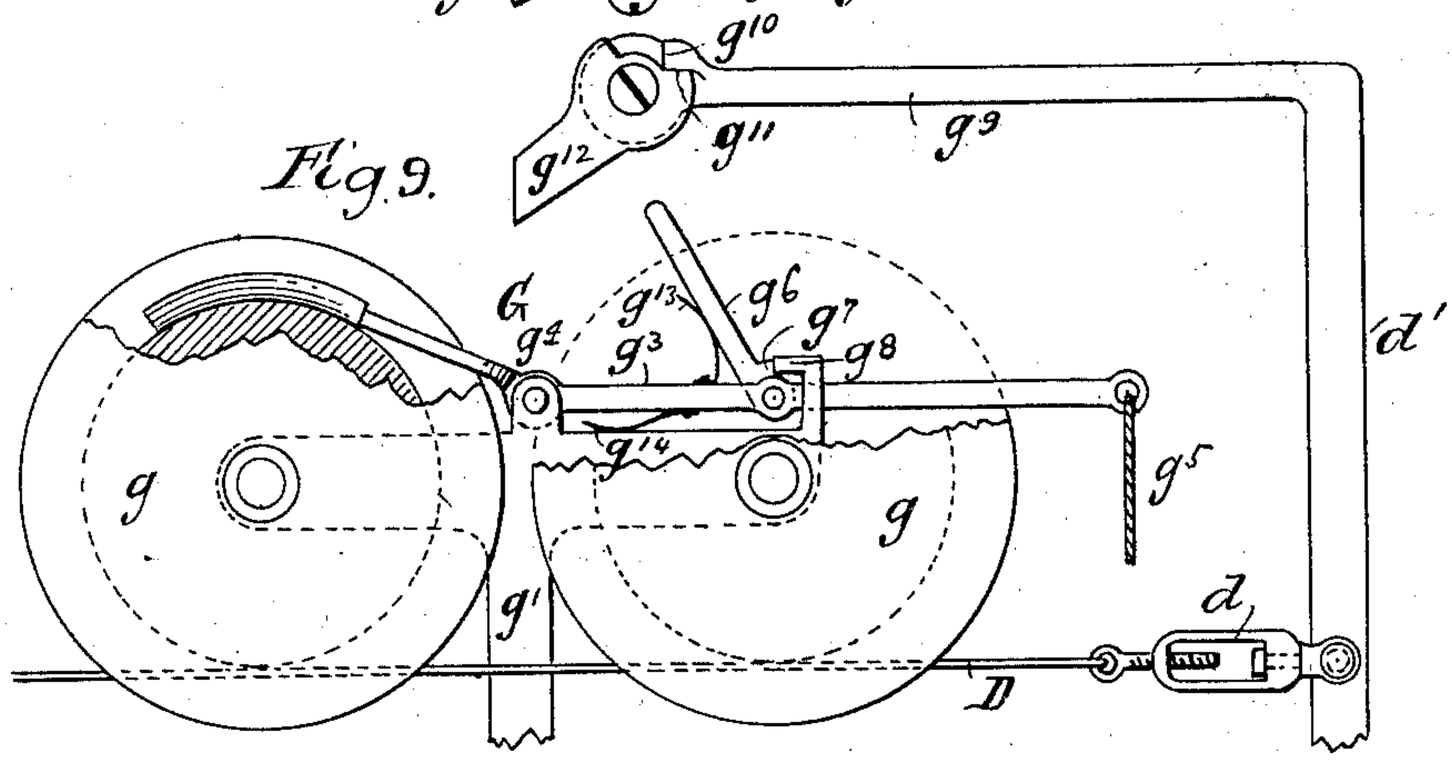
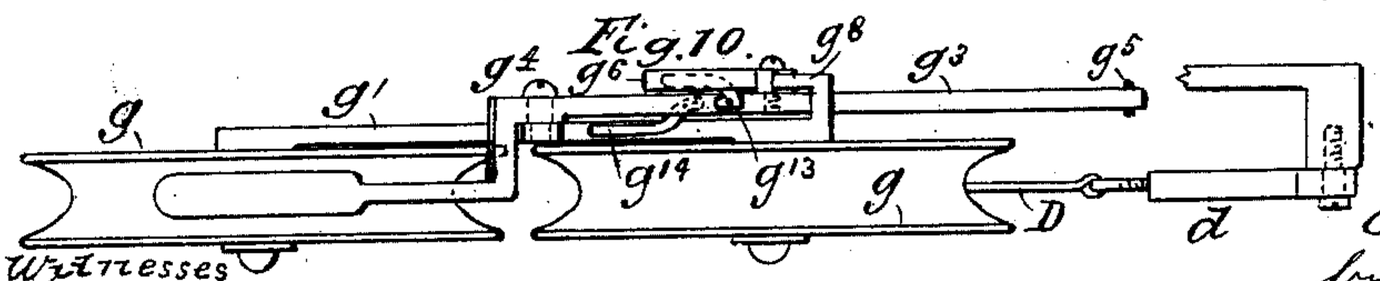


Fig. 10.



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his attorney.

UNITED STATES PATENT OFFICE.

CHARLES W. ELLIOTT, OF BOSTON, MASSACHUSETTS, ASSIGNOR TO GILBERT R. ELLIOTT, OF SAME PLACE, AND WATKIN M. GRIFFITH AND ISAAC W. PARMENTER, BOTH OF NEW YORK, N. Y.

STORE-SERVICE APPARATUS.

SPECIFICATION forming part of Letters Patent No. 374,295, dated December 6, 1887.

Application filed June 17, 1887. Serial No. 241,600. (No model.)

To all whom it may concern:

Be it known that I, CHARLES W. ELLIOTT, a subject of the Queen of Great Britain, residing at Boston, in the county of Suffolk and State of Massachusetts, have made a new and useful invention for use in Store-Service Apparatus, of which the following is a specification, reference being had to the accompanying drawings, forming a part thereof.

My invention relates to what is known as a "store-service system," in which cash and goods are conveyed to and fro between the salesman and cashier and examining-clerks by means of a wire track capable of being inclined in reverse directions, whereby a car can be caused to travel thereon by gravity.

My invention comprises a device for raising the car to the track by means of foot-power, a toggle device operating in conjunction with the latter for controlling the descent of the car from the track to the salesman, a device for imparting an impetus to the car when in position to start toward the cashier, mechanism for stopping and releasing the car at the cashier's end of the track, and means for automatically seizing and sustaining the track for a sufficient time for the car to reach the cashier and then releasing and allowing the track to drop, in order to cause the return of the car to the salesman.

In the drawings, Figure 1 is an elevation of a store-service apparatus embodying my invention and showing the upper position of the track by dotted outline. The remaining figures are details of parts shown in Fig. 1, and drawn to an enlarged scale. Fig. 2 is a front elevation of the device for raising the car and controlling the descent of the same. Figs. 3 and 4 are respectively a side elevation and plan of the latter. Fig. 5 is a side view of a movable section of the track, and showing a device connected therewith for imparting an impetus to the car in starting. Fig. 6 is a plan of the latter. Figs. 7 and 8 are respectively a front and side elevation of the device for automatically reversing the inclination of the track at the proper time. Fig. 9 is a side elevation of the car and mechanism for stopping and releasing it at the cashier's end of the track. Figs. 10 and 11 are plans of certain parts shown in Fig. 9.

Similar letters refer to similar parts throughout the several views.

A designates a cashier's compartment, adjoining which is a counter, B, for examining or measuring articles forwarded by a salesman at a counter, C.

D is a wire track secured at one end to a turn-buckle, d, pivotally connected to a fixed support, d', and at its other end to a vertically-adjustable support, E, consisting of an arm, e, pivotally connected to a carriage, e', provided with an extension, e^{12}, and anti-friction rollers e^2, working against a vertical guide-bar e^3, secured to the ceiling. The arm e has its central portion set out sidewise, and is provided with an end portion, e^4, in line with and forming a part of the track, and to which the wire track is secured. Hinged to the portion e^4 is a bar, e^5, to which a flexible cord, e^6, is secured and passed around a pulley, e^7, mounted in bearings on the arm e, and so arranged that the cord will form a continuation of the track, and have relatively a steeper inclination. From the pulley e^7 the cord is carried over a pulley, e^8, mounted in bearings secured to the guide-bar e^3, and from thence to a device, F, for raising and lowering the car. This device consists of a frame, F', having a base-plate, f, and top plate, f', rigidly united by four guide-rods, f^2 f^3 f^4 f^5.

A foot-plate, f^6, provided with hubs f^7, is loosely mounted to slide to a convenient height on the rods f^2 and f^3, by means of a cord, f^8, secured to said foot-plate and passing over a pulley, f^9, mounted in bearings in the top plate, f', and thence to a bracket, f^{10}, to which it is secured. This bracket is secured to a cross-bar, f^{11}, provided with hubs f^{12}, and loosely mounted to slide on guide-rods f^4 and f^5. f^{13} is a series of pulleys mounted in bearings secured to the cross-bar f^{11}, and f^{14} is another series of pulleys mounted in bearings secured to the base-plate f, and around which passes the cord e^6, before mentioned, its end being secured to the base-plate f. By this means the vertical movement of the foot-plate will multiply to any extent that of the cord e^6.

When the car is received on the cord e^6, it will draw the top series of pulleys f^{13} and cross-bar f^{11} downward as it descends from the track, causing the foot-plate f, connected to the cross-bar f^{11} by the cord f^8, to rise.

Pivoted to the cross-bar f^{11} and base-plate f are a pair of toggle-levers, f^{15} f^{16}, having coil-springs arranged around their connecting-pins in such manner that their tension may be adjusted substantially like that for ordinary door-hinges. These springs tend to maintain the cross-bar f^{11} in its upper position, preventing any slack in the cord e^6, and have their tension so adjusted as to allow the car to descend with proper and uniform speed by reason of the toggle-levers arranging themselves to act with increasing leverage as the car descends, thereby compensating for the increasing tension of the springs during the same period.

G is a car consisting of grooved wheels g g, journaled to a T-shaped support, g', from which is suspended a suitable receptacle, g^2, for parcels. A lever, g^3, is fulcrumed between its ends at g^4 to the support g', and having one end formed to act as a brake and stop the car, and the other end provided with an eye, to which a cord, g^5, is attached.

g^6 is a trip-lever having a shoulder, g^7, to engage with a projection, g^8, integral with the support g'.

g^9 is a bar secured to a fixed support, and having a projection, g^{10}, against which rests a shoulder, g^{11}, of an abutment, g^{12}, pivoted to said bar and movable in one direction.

To return the car to the salesman, the operator pulls the cord g^5, which raises the brake and lowers the pivoted portion of the lever g^6, causing its shoulder to engage with the under side of the projection g^8, by means of the spring g^{13}, and be retained there until the car again returns to the cashier, when the upper end of the lever g^6 comes in contact with the abutment g^{12}, which throws it out of engagement with the projection g^8, when the spring g^{14} will cause the brake to act and stop the car.

H is a movable stop, the periphery of the arc-shaped portion of which is circular and concentric with the center of the shaft h, to which it is secured. This shaft is supported in a bearing on the arm e, and provided with a pulley, h', around which a cord, h^2, is secured and passed over a pulley, h^3, and thence to within reach of the operator.

When the car is in position to start after it has been raised and the track has been lifted by pulling on the cord e^6 by hand, the cord h^2 is pulled, which raises the stop that retains the car, and by reason of the car's sudden release it will receive an impetus causing it to make a rapid transit. The circular motion of the stop obviates giving a backward movement in operating it to the car. h^4 is a pin to limit the downward motion of the stop to its normal position. It is secured to the pulley h' and strikes against the support h^5. This pin may also strike against a projection on the top of the support h^5 to limit the upward motion of the stop H. The stop falls by its own weight after being raised by the operator, and may be automatically raised by the cord h^6, if desirable.

L is a device for automatically reversing the inclination of the track. It consists of a cylinder, l, filled with a suitable liquid and having an extension, l', by which it may be secured to the guide-bar e^3 by a set-screw.

l^2 is a piston having a valve, l^3, attached to its lower side, tending to close by the pressure of the fluid when the piston descends and secured on its upper side to the forked end of a rod, l^4, secured to a cross-bar, l^5. This cross-bar is rigidly secured to another cross-bar, l^6, by side rods, l^7, working through lugs cast on the cylinder.

l^8 l^8 are jaws having upward extensions l^9 l^9, working within loops l^{10} l^{10}, secured to the base portion of the cylinder and having springs l^{11} l^{11} to keep the jaws in a closed position.

l^{12} is a rod passing loosely through the cross-bar l^5 and screw-threaded into and through the annular wall of the piston until it projects sufficiently to form a stop to prevent the valve l^3 from entirely closing the passage through the piston, and which may be regulated by means of a knob, l^{13}.

The head e^9 of the extension e^{12}, forming part of the carriage e', is formed with inclined sides and provided with shoulders e^{10} and a flat upper portion, e^{11}. It operates as follows: On raising the track the head e^9 enters the V-shaped opening in the jaws, forcing them apart, and, coming in contact with the cross-bar l^6, raises it, together with the upper cross-bar and piston, causing the liquid in the cylinder to pass below the piston. On reaching the upper position the spring-actuated jaws sustain the track, thereby relieving the operator. While the car is moving toward the cashier the weight of the track is causing the piston to slowly descend in the cylinder by reason of the reflowing of the liquid from the lower to the upper side thereof through the small opening given to the valve. When the car has reached its destination, the reflow has been so regulated by the rod l^{12} that the piston and its connected parts have reached a position where the extension of the jaws will come in contact with the loops l^{10} l^{10} and cause the jaws to open and release the track.

I have shown only one track and its operating devices; but any number may be arranged in a store so as to radiate to a common point.

The following, among other advantages, flow from the use of a store-service apparatus constructed according to my invention: the salesman is relieved from holding the track up until the car reaches the other end and then lowering it for the return thereof, as this operation is performed automatically. He is therefore enabled to devote his time to a customer or otherwise more profitably. Besides, the car can be received from and replaced upon the track and the latter raised to its up-

per position by means of one and the same cord, which by the application of foot-power renders the operation simple and time-saving, requiring but little attention.

Having now described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination, with the track D, car G, and operating-cord e^6, of two series of pulleys around which the end of said cord is passed and secured to a fixed support, one series of said pulleys turning on an axis mounted in a stationary plate and the other series of said pulleys turning on an axis mounted in a movable plate sliding on suitable guide-bars, the said movable plate being connected to a foot-plate by a cord or chain passing over a pulley, whereby the depression of the foot-plate will draw the series of pulleys mounted in the movable plate away from the other series and thereby raise the car to the track, substantially as described.

2. The combination, with the track D, car G, and operating-cord e^6, of the two sets of pulleys f^{13} f^{14}, cross-bar f^{11}, pulley f^9, cord f^8, and foot-plate f^6, arranged substantially as shown and described.

3. The combination, with the track D, car G, and cord e^6, of toggle-levers actuated by springs having an adjustable tension to act as a counterpoise to the weight of the car, whereby its descent will be controlled, substantially as described.

4. The combination, with the track D, car G, and cord e^6, of the two sets of pulleys f^{13} f^{14}, cross-bar f^{11}, spring-actuated toggle-levers f^{15} f^{16}, pivoted to said cross-bar f^{11}, pulley f^9, cord f^8, and foot-plate f^6, arranged substantially as shown and described.

5. The combination, with the track D, car G, cord e^6, and adjustable support E, of a movable stop in the form of a sector of a circle secured to a shaft free to be rotated to raise the stop and allow the car to pass beneath the same, whereby an impetus may be imparted to the car in starting, substantially as described.

6. The combination, with the track D, car G, cord e^6, and adjustable support E, of the movable stop H, having an arc-shaped portion against which the car rests, the said stop being mounted on a shaft, h, and operated by a cord, h^2, carried on pulleys to a position within reach of the operator, substantially as described.

7. The combination, with the track D, of a car provided with a brake-lever, g^3, fulcrumed to the wheel-support g', a trip-lever, g^6, pivoted to and controlled by the lever g^3, springs g^{13} g^{14}, for actuating said levers, and the abutment g^{12}, movable in one direction and serving to trip the lever g^6, whereby the brake-lever g^3 will act to stop the motion of the car, substantially as described.

8. The combination, with the track D, car G, adjustable support E, cord e^6, and guide-bar e^3, of the automatic escapement L, consisting of the cylinder l, piston l^2, and valve l^3, operating to control suitable mechanism for sustaining and releasing the track by means of the gradual and regulated reflow of a liquid within the cylinder l, substantially as described.

9. The combination, with the track D, car G, adjustable support E, provided with an extension, e^{12}, and head portion e^9, of the jaws l^8 l^8, adapted to engage with the said head portion e^9 and sustain the track, and having extensions l^9 l^9, actuated by springs l^{11} l^{11} in one direction to close the jaws and by loops l^{10} l^{10} in the other direction to open them, the cross-bar l^6, to which the jaws are pivoted and capable of being raised by the head portion e^9 on the raising of the track, carrying therewith the piston l^2, to which it is connected through the rod l^4, cross-bar l^5, and side rods, l^7 l^7, and the rod l^{12}, for regulating the opening of the valve l^3 to prolong the descent of the piston and releasing mechanism connected therewith, substantially as described.

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Witnesses:
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