(No Model.) 3 Sheets—Sheet 1.

J. WHITTEMORE.

STORE SERVICE APPARATUS.

No. 444,680. Patented Jan. 13, 1891.

Fig. 1.

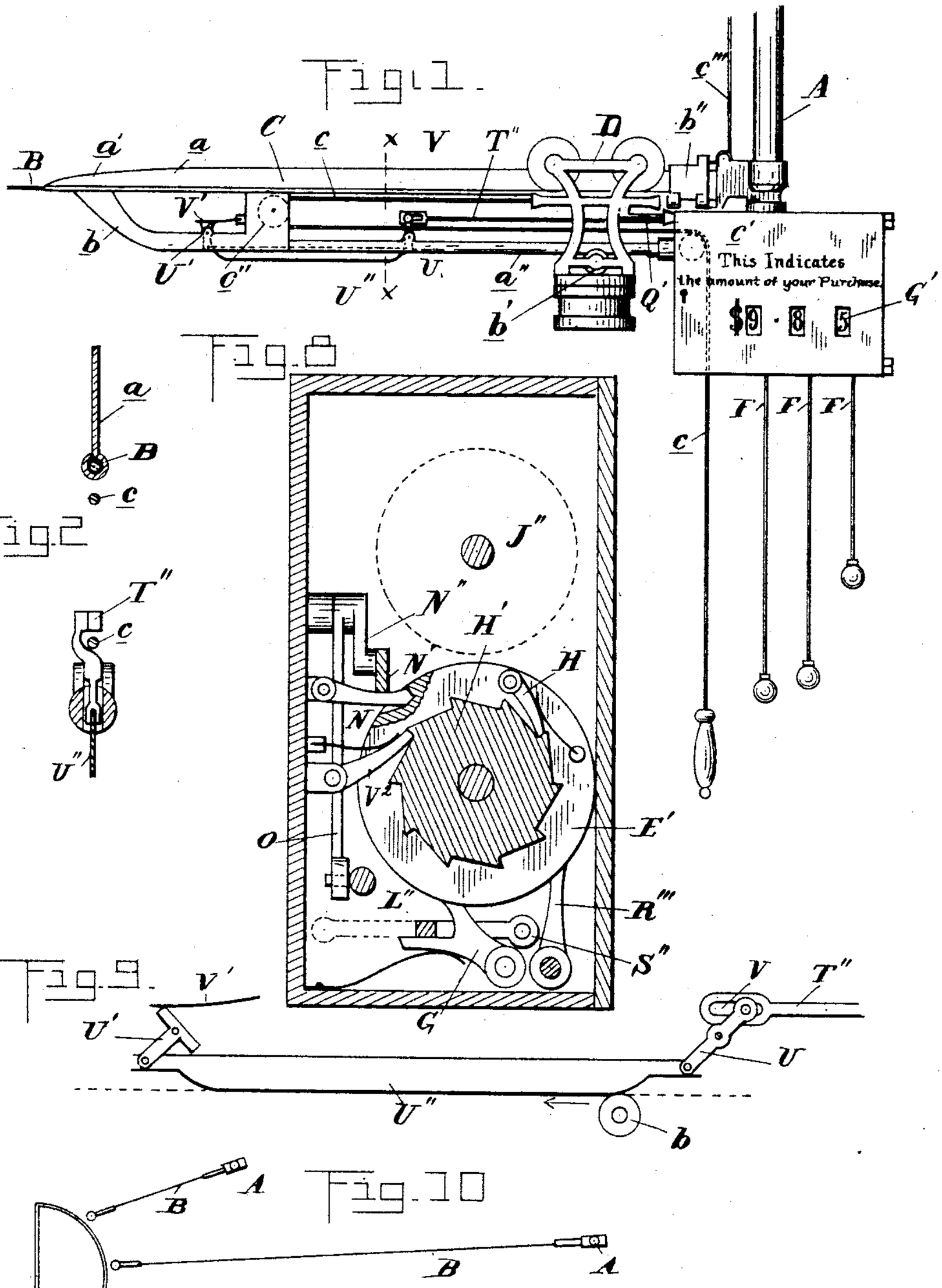
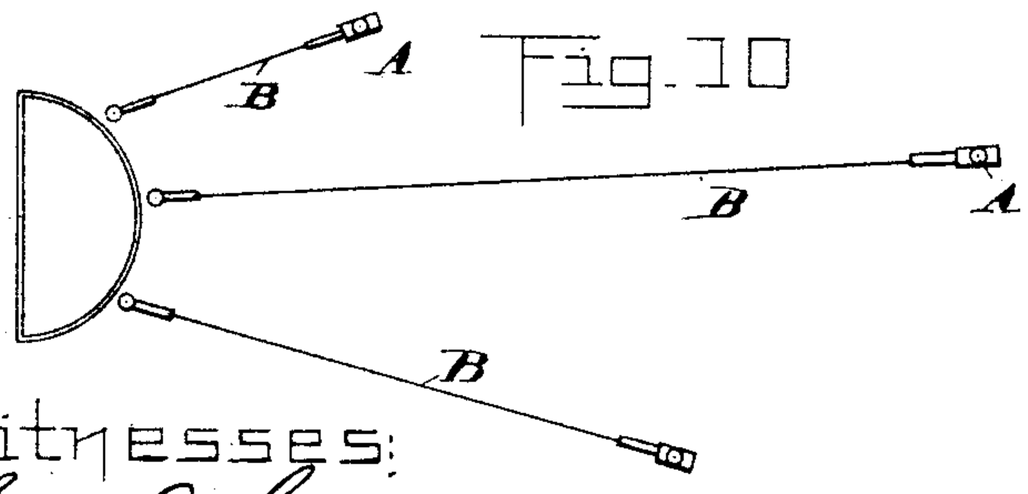


Fig. 2.

Fig. 3.

Fig. 9.

Fig. 10.



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Alfort B Eaton

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Atty

(No Model.)

3 Sheets—Sheet 2.

J. WHITTEMORE.

STORE SERVICE APPARATUS.

No. 444,680. Patented Jan. 13, 1891.

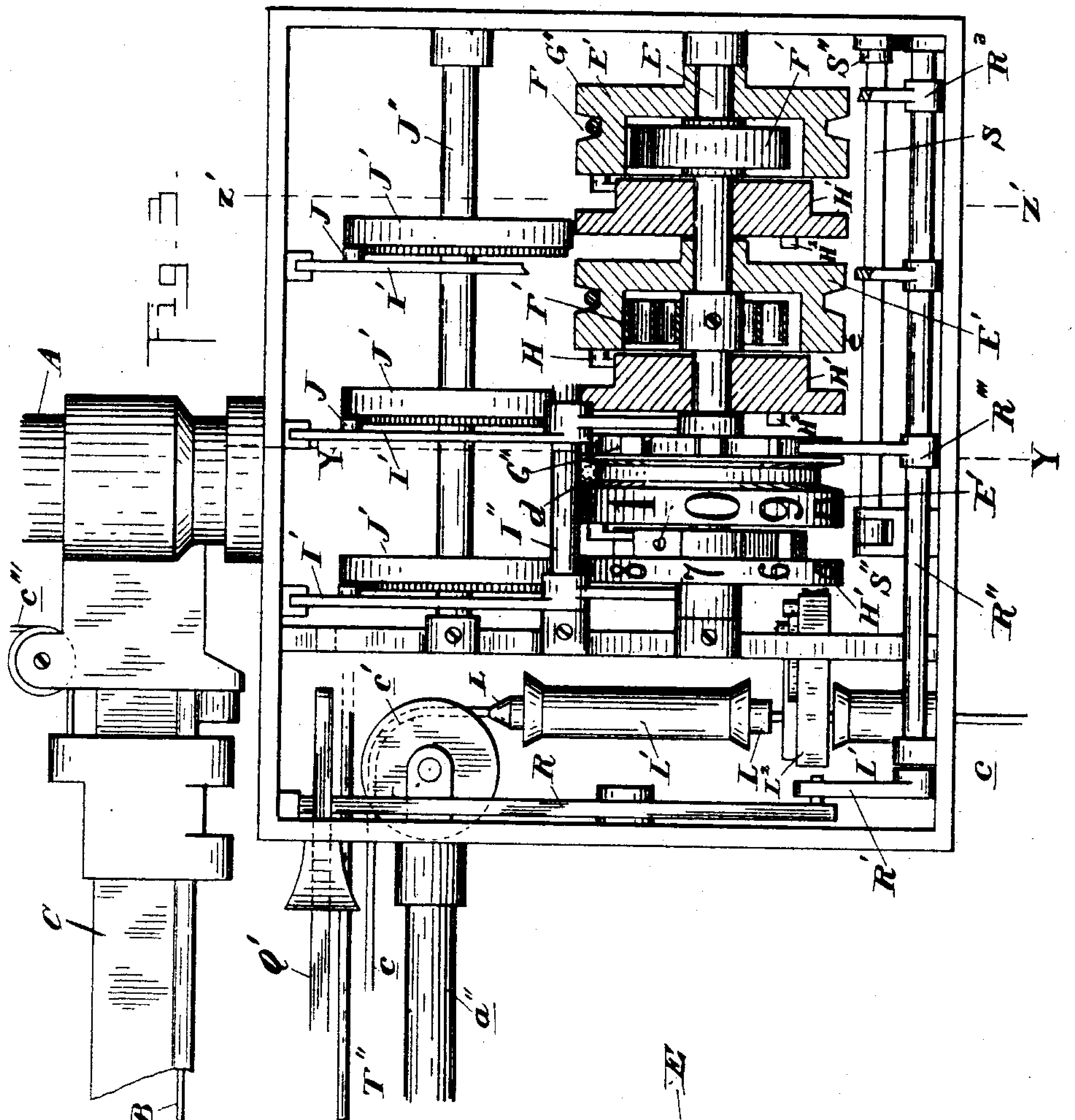

Fig. 3

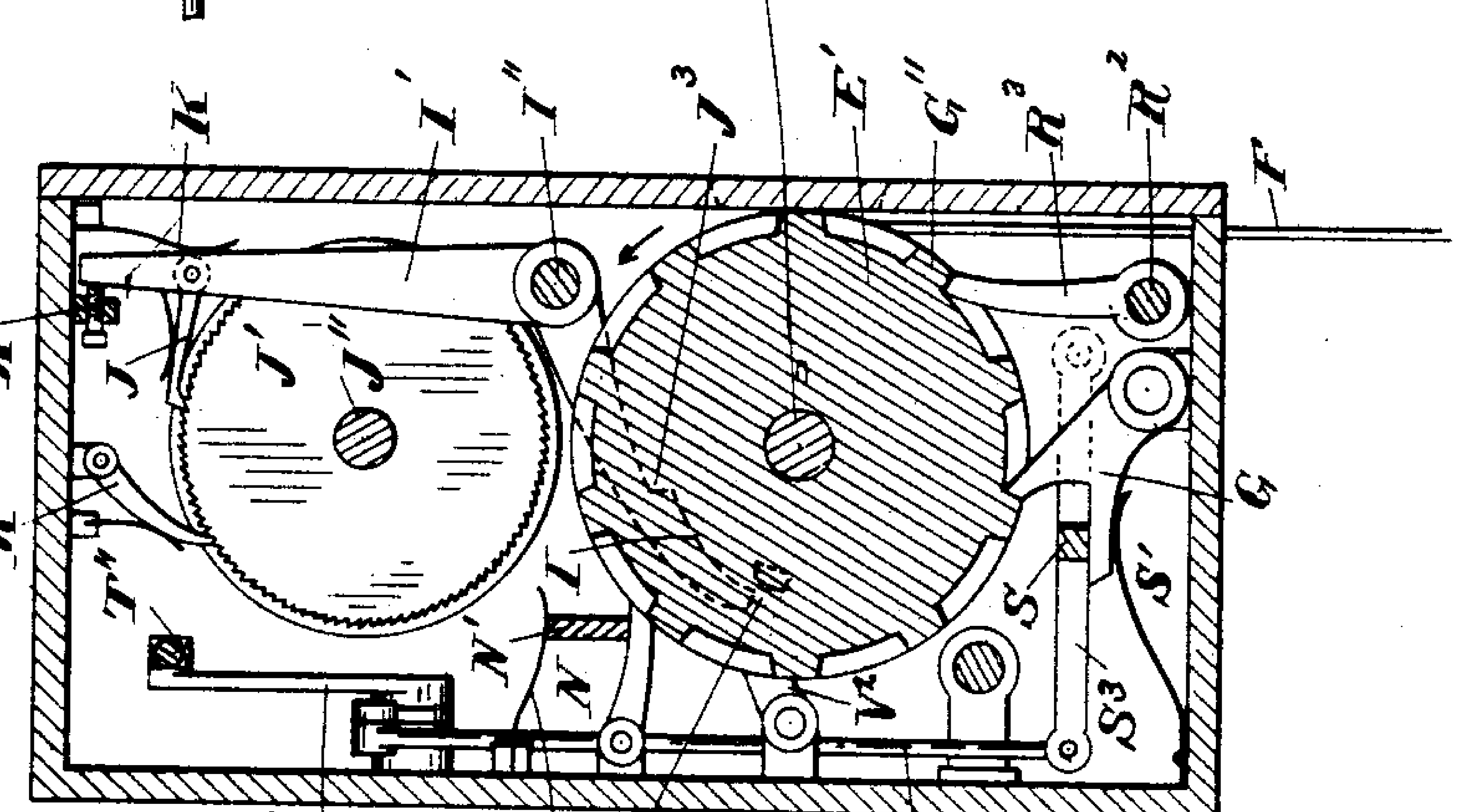

Fig. 4

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STORE SERVICE APPARATUS.

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Fig. 6.

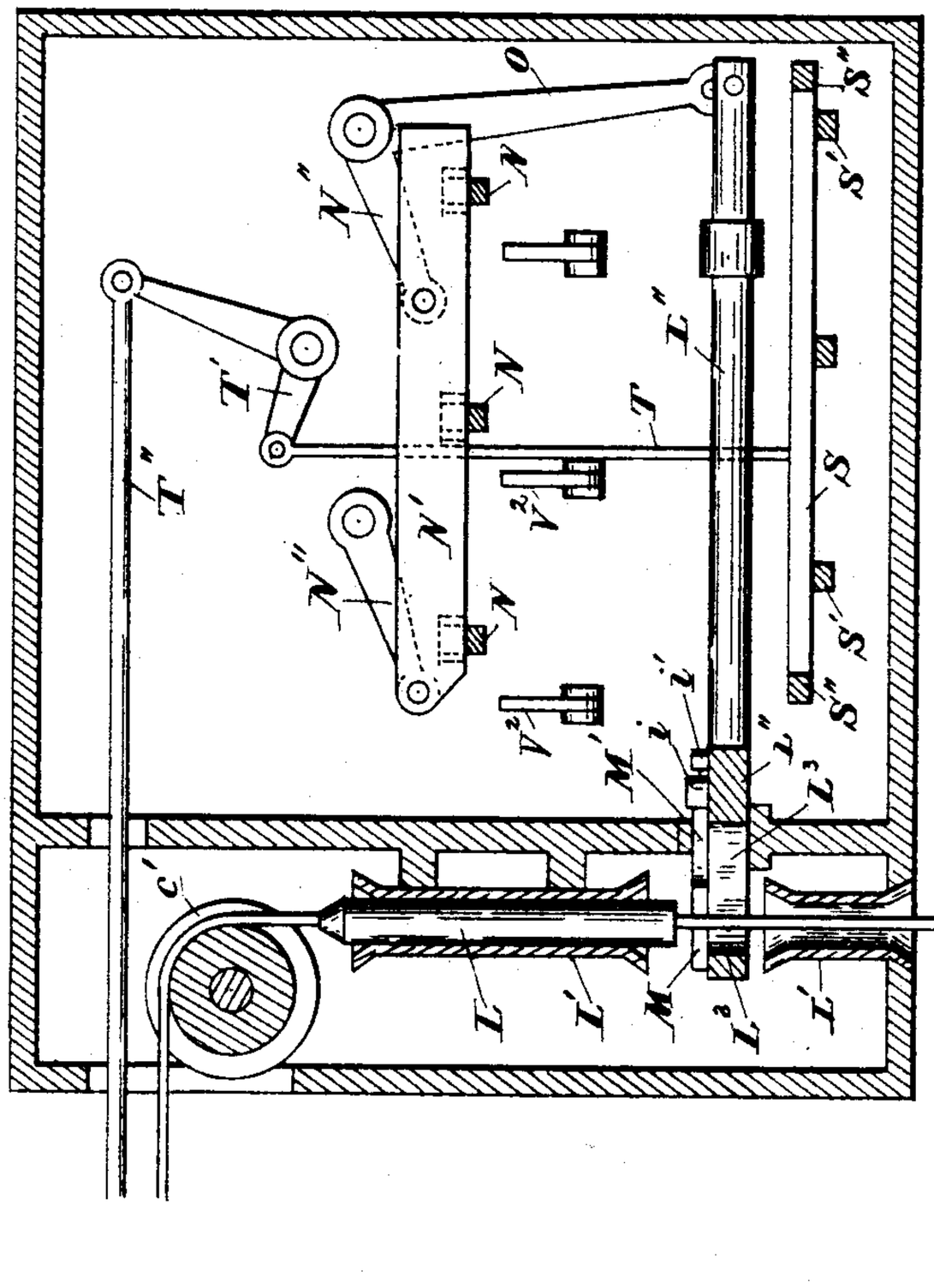


Fig. 7.

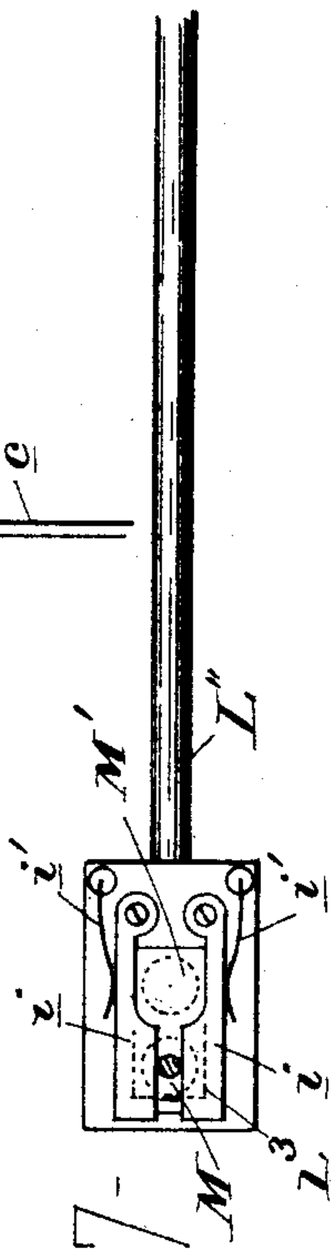
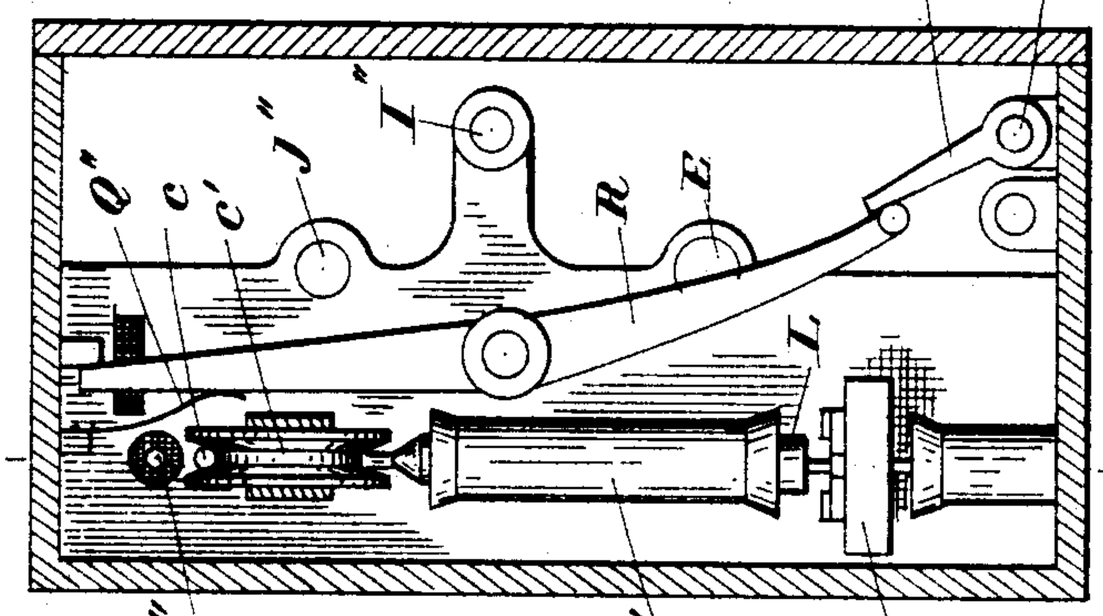


Fig. 5.



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Atty

UNITED STATES PATENT OFFICE.

JAMES WHITTEMORE, OF DETROIT, MICHIGAN, ASSIGNOR TO THOS. S. SPRAGUE & SON, OF SAME PLACE.

STORE-SERVICE APPARATUS.

SPECIFICATION forming part of Letters Patent No. 444,680, dated January 13, 1891.

Application filed March 8, 1890. Serial No. 343,193. (No model.)

To all whom it may concern:

Be it known that I, JAMES WHITTEMORE, a citizen of the United States, residing at Detroit, in the county of Wayne and State of Michigan, have invented certain new and useful Improvements in Store-Service Apparatus, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to new and useful improvements in store-service apparatus; and the invention consists, first, in the peculiar construction, arrangement, and combination, with a store-railway, of a cash register and indicator adapted to co-operate therewith; second, in the construction of the cash-registering apparatus, whereby it is locked from operation while the car of the railway is absent from its station; third, of the construction of the indicating apparatus, whereby the indication remains exposed while the car is away from its station; fourth, in the construction of devices for returning the indication to zero upon the return of the car; fifth, in the construction of the cash registering and connecting mechanism, whereby the car is locked against operation until the register is operated; sixth, in the peculiar construction, arrangement, and combination of the various parts, all as more fully hereinafter described.

In the drawings which accompany this specification, Figure 1 is a side elevation of my improvement. Fig. 2 is a cross-section thereof on line *x x*. Fig. 3 is a front elevation of the cash-register with the front plate removed and partly in section. Fig. 4 is a cross-section on line *y y*, Fig. 3. Fig. 5 is an elevation of the left end of Fig. 4 with the casing removed. Fig. 6 is a vertical longitudinal section through the register on line *z z* in Fig. 5. Fig. 7 is a plan view of the locking-bar for the actuating-cord of the car. Fig. 8 is a cross-section on line *z' z'* in Fig. 3. Fig. 9 shows bar U'' as the carriage is passing out. Fig. 10 is a diagram plan of my store-service system as applied to a number of lines.

A is the hanger or standard of a store-railway apparatus secured to the ceiling, to which one end of the wireway B is secured. C is the terminal track, which in the drawings I have shown as a single strip of metal *a*, secured upon the track having an incline *a'* at its outer end. Below is a guide-rail *a''*, having an incline *b*. The wheels of the carriage D are grooved to run upon the strip *a'*, and a supplemental wheel *b'* runs upon the guide-rail *a''*. *b''* is a sliding pusher upon the strip *a*, adapted to be propelled by pulling the cord *c*, which passes over the pulleys *c'* and *c''* and the end attached to the sliding pusher, which has suitable buffer-blocks, against which buffers upon the car strike. The sliding pusher is normally retracted by an elastic cord *c'''*. The particular construction of this cash-carrier and terminal station is not my invention, and I hereby disclaim the same as thus far described. While I have shown this particular construction of carrier and terminal station, it is not at all an essential part of my invention, and any other type of store-service apparatus may be used by simply making the necessary changes of the parts operating in connection with the registering mechanism. The hanger or standard A forms the support for my cash-registering apparatus, which may be of any desired construction, so that it co-operates with the store-service apparatus. I have herein shown and described a cash-register which is what I preferably use.

I will first describe the registering and indicating mechanism.

E is a shaft stationarily secured in suitable fixed supports in the frame of the machine, and upon this shaft are journaled the series of actuating and indicating wheels E', each of which is provided with the circumferential groove *d*, in which is secured the actuating-cord F. A recess is formed upon one side of these wheels, in which the coil-spring F' is secured, one end to the shaft E and the other end to the wheel E', so arranged that the tension of the spring will always tend to rotate the wheels from right to left, as shown by arrow in Fig. 4. These wheels are also marked upon the face *e* with the digits and a cipher, and provided with a circumferential ratchet G'', one notch for each digit, the spring-pawls

G (shown in Figs. 4 and 8) engaging with the ratchet and holding the wheel in its adjusted position. An aperture G′ in the casing (shown in Fig. 1) exhibits one figure at a time, the cipher being normally exposed to view. Each wheel E′ carries a spring-pawl H, which engages with a ratchet upon the registering-wheel H′, which corresponds with the ratchet upon the wheel E′. This wheel is marked to correspond with the figures upon the wheel E′.

H″ is a pin upon the side of the wheel H′, which strikes the incline I upon the bell-crank lever I′, pivoted upon the shaft I″ and rocks the lever so that the spring-pawl J moves forward one notch of the registering-wheel J′, which is pivoted upon the shaft J″. As soon as the pin H^2 reaches the notch J‴ in the lever I′ the spring K moves the lever to turn the wheel J′ one notch. The movement of the lever I is stopped by the set-screw K′, by means of which it may be adjusted.

K″ is a spring-pawl, which prevents the retraction of the wheel J′. Thus it will be seen that each rotation of the wheel H′ moves the wheel J′ one notch.

While I have described but one group of wheels the parts referred to are similar in all three groups, and like letters refer to like parts in each group. The wheel E′ at the right represents units, the next wheel to the left tens, and the next hundreds, when used with the decimal system.

The operation of this mechanism to indicate and register the amount shown in Fig. 1 ($9.85) is as follows: The operator draws down first upon the units or cents cord until the "5" is exposed to view. The wheel E′ in the cents group is rotated five notches, carrying with it the registering-wheel H′, and is held in its operated position by the pawl G. Next the tens-wheel is turned until the "8" is exposed to view, it having correspondingly moved its registering-wheel, and then the dollars-wheel is turned to "9" by its cord, and the amount is indicated as shown. A stationary dollar-mark and a stationary period upon the casing assist in the reading.

I provide means for preventing the propelling of the car from the station until the registration is commenced, and means for unlocking the car to permit its being propelled as soon as the registration is commenced, of the following construction: The pulley or wheel *c′* I locate within the casing of the register, and the cord *c* I provide with an enlarged bearing or block L, having its upper end tapered and its lower end square, as plainly shown in Fig. 6. This block is guided in its vertical movement by the guide-tubes L′. Below this tube is slidingly secured the locking-bar L″, having a slot L^3, through which the block L can pass freely. *i* are wings pivotally secured to the bar L″ and held in position by the springs *i′*, so as to form the slot M, through which the cord can pass, but too small to permit the passage of the block L, and the aperture M′ of sufficient size to allow the block to pass freely through. When the slot M is beneath the block L, it is evident that the cord for actuating the car cannot be withdrawn, as the block could not pass through the slot; but when the aperture M′ is beneath the block the block can freely pass through to allow of propelling the car by drawing upon the cord. To reciprocate this bar I construct the following mechanism: N are spring-latches which in the initial position of the registering and indicating wheels rest in a notch in the periphery of each of the wheels E′, so arranged that when any wheel E′ has moved one notch the end of its latch will be lifted out of the notch and for the remainder of the rotation will run upon the face of the wheel. The upward motion of this latch carries with it the swinging bar N′, which is supported by the inclined links N″. The bar N′ is common to all of the latches. One of the links has a crank-arm O, which engages with the bar L″. A spring O′ (see Fig. 4) tends to hold the bar firmly in contact with the latches N. The operation of any indicating-wheel one notch or more will raise the latch, and with it the bar N′, rocking the arm O and moving the bar L″ with the aperture M′ beneath the guide Q. In this position it is evident the cord may be drawn to propel the car. As soon as the car is propelled the bar Q′, which is upon the car, is withdrawn and allows the vertical lever R to be moved by the tension of the spring Q″. This lever at its lower end bears against the rock-arm R′ upon the shaft R″, which carries the spring-pawls R‴. These pawls are by this movement thrown into engagement with the ratchet upon the wheels E′ and hold them against operation until the return of the car. At its end the arm Q′ upon the car has a tapered or inclined portion upon its inner edge, which bears against the lever R, moving it, and thus throwing the pawls R^3 out of engagement with the wheels E′ as long as the car is in place. The parts having been operated to register and indicate any desired amount and the car being propelled, the registering operating-wheels are returned to normal position by the incoming of the car by disengaging the pawls G by means of the releasing-bar S, extending across all of the pawls and engaging with the extension S′ thereof. This bar is supported by suitable pivotal arms S″ and has an arm S^3, which at its outer end is connected to the arm T, which connects to the bell-crank lever T′, the other arm of which connects to the tripping-bar T″, extending outside the casing and connecting to the lever U, which at its lower end connects to the bar U″, the other end of which is supported by a link U′, having a squared head, against which the spring V′ acts, tending to return the link U′ and bar U″ to their normal position, as shown in Fig. 1. The bar U″ projects slightly below the bottom of the guide-rail *a″* and in the path of the guide-wheel *b′*. The wheel *b′* on the incoming car strikes the bar U″ and swings it upwardly and inwardly, swinging

the lever U, and with it the rod T″, depressing the bar S and disengaging the pawls G, which allows all the parts to return to their normal position. The registering-wheels are held in their adjusted position by means of the pawls V″. The outgoing of the car does not operate the tripping mechanism, as the movement of the lever U in the opposite direction does not impart motion to the rod T, owing to its movement in the slot V in the rod, as shown in Fig. 9. It will be seen that as soon as the car is shot and the operator releases his hold of the cord *c* it is drawn to its initial position ready for the next operation by the spring *c‴* withdrawing the block L above the bar L″ through the medium of the connecting-cord *c*. Should the spring *c‴* not act promptly, the passage of the block L is permitted through the bar L″ by the lateral yielding of the wings *i*, which are pivotally connected to the bar and held normally in position (shown in Fig. 7) by the spring *i′*. It will thus be seen that the action of the cash-register is dependent upon and co-operates with the cash-carrier apparatus.

A store-service apparatus thus constructed and comprising a cash-carrier way connecting a sending and receiving station and a carrier or car on that way and the cash-register constructed and operating as described accomplishes the following results, which are not accomplished by either one alone. In many stores where a single cash-carrier line is used it would be a simple matter for the clerk and cashier to conspire to defraud the proprietor where the cash-carrier alone were used; but by applying the cash-register, cooperating with the carrier, the clerk must necessarily operate the register before the cash can be sent to the cashier. In thus registering the indication is exposed to the purchaser and the clerk is thus called upon to indicate the proper amount of the sales, which is also registered. As soon as the cash is put in the carrier and the carrier propelled the register is locked against further operation by the clerk. Should the clerk make another sale while the car is absent, he could not, therefore, indicate and register the same until the car returned. As soon as the car comes in, the parts are all returned to their initial position, the indication to naught, ready for another operation. The proprietor can at any time see by inspecting the registering-wheels the total amount of sales, a suitable hinged cover being provided for the register.

Another use of my invention, in addition to that previously mentioned, is in use in large stores having a number of lines. A cash-register at each sending-station accurately and automatically foots up the amount of cash sent from that station, and at night the proprietor can simply add the total of the amounts registered at the different stations, and if it corresponds with the cash account at the cashier's desk it is evident that it must be correct; but if there is a shortage it is evident that something is wrong. To make sure that each amount is registered before sending forward the cash the operation of the carrier must be dependent upon the prior operation of the register, and the register must be locked during the absence of the car, so that no cash can be sent unless registered and none registered unless the car is present to receive the cash.

The present use of stub-books requires that, in order to check the totals, the stubs be added. The cash-registers thus placed indicate the sales of each counter each day, and the proprietor can see which counters or departments are doing well and which are having small sales.

The advantage of my type of register is that it may be secured upon the standard supporting the terminal station of the carrier. The indicator and registering mechanism is thereby out of reach, so that it cannot be tampered with.

The operation of the register by simply drawing upon the cord is so simple that any one can operate it who can count and pull a string. Having the register above the counter also leaves the counter free of its encumbrance.

While I show a specific construction of cash-carrier apparatus and a specific construction of cash-registering apparatus, I do not desire to limit myself to such specific construction, as I am aware that there are a great many different kinds of cash-carriers and many kinds of cash-registers which may be combined with proper mechanism for causing them to co-operate in the manner and for the purpose herein described; nor do I desire to limit myself to the location of the cash-register, although I deem the end of the way and the standard of the cash-carrier apparatus by far the best location. I know it can be put upon the counter or even carried by the carrier itself.

What I claim as my invention is—

1. The combination, with a store-service apparatus, of a cash-register and means actuated by the register for controlling the operation of the apparatus, substantially as described.

2. The combination, with a store-service apparatus, of a cash-register connected directly therewith and mechanism actuated by the register for controlling the operation of the apparatus, substantially as described.

3. In a store-service apparatus, the combination of a way connecting two stations, a carrier on said way, a cash-register at one of said stations, and means arranged and constructed to make the operation of the carrier dependent on the same, substantially as described.

4. The combination of a cash-carrier apparatus, a cash-register, and connecting mechanism arranged to make the operation of one dependent on the other, substantially as described.

5. The combination of a cash-carrier apparatus, a cash-register apparatus, and a lock for the cash-register adapted to be released by the carrier apparatus, substantially as described.

6. The combination of a cash-carrier apparatus, a cash-register apparatus, and connecting mechanism whereby the registering mechanism is returned to its initial position by the cash-car apparatus, substantially as described.

7. The combination of a cash-carrier apparatus, a cash register and indicator, and connecting mechanism whereby the indicating mechanism is returned to its initial position, ready for another indication by the movement of the car, substantially as described.

8. The combination of a cash-carrier apparatus, a cash register and indicator, and mechanism whereby the indication is removed upon the return of the car, substantially as described.

9. The combination of a cash-carrier apparatus, a cash register and indicator, and connecting mechanism whereby the indication is exposed during the travel of the car and is removed upon the return thereof, substantially as described.

10. The combination, with a cash-carrier and a cash register and indicator, of a series of indicating devices, mechanism for operating said devices, a tripping device common to all of said indicating devices, and a connection between said tripping device and the cash-car apparatus, whereby the indication is removed by the movement of the cash-car, substantially as described.

11. The combination, with a cash-car and a cash register and indicator, of a series of indicating-wheels, mechanism for operating each of said wheels independently, a tripping device common to all of said indicating-wheels, and a connection between said tripping device and the cash-car, whereby the indication is removed by the movement of the cash-car, substantially as described.

12. The combination, with a cash-car and a cash register and indicator, of a series of spring-actuated indicating-wheels, mechanism for operating each of said wheels independently, a tripping device common to all of said indicating-wheels, and connecting mechanism whereby the wheels are turned to their initial position by the incoming car, substantially as described.

13. The combination of a cash-carrier apparatus, a cash-register, a lock for the registering mechanism, and mechanism for disengaging said lock when the car is at the station, substantially as described.

14. The combination of a cash-carrier apparatus, a cash-register, a lock for the registering mechanism, locking said mechanism against operation during the absence of the car, an arm upon said car, and connecting mechanism disengaging said lock upon the return of the car, substantially as described.

15. The combination of a cash-carrier apparatus, a cash-register, a series of wheels adapted to register different denominations of monetary value, mechanism for operating the wheels of each denomination, a pawl to hold said wheels in their operated position, a trip common to all the registering actuating mechanism, tripping mechanism for operating said trip, operated by the movement of the carrier, whereby the registering actuating mechanism is reset by the movement of the cash-carrier, substantially as described.

16. The combination, in a store-service apparatus, of a propelling-cord, a cash-car, a cash-register, a locking device normally locking the propelling-cord of the car, and mechanism for releasing the cord upon the operation of the cash-registering device, substantially as described.

17. In a store-service apparatus, the combination of a cash-carrier and a cash-register, a locking device for the carrier, and mechanism between said locking device and the cash-register, whereby said lock is released upon the operation of said register, substantially as described.

18. In a store-service apparatus, the combination of a cash-carrier, a cash-register, a locking device for the carrier, and connecting mechanism with each denomination of the cash-register apparatus, whereby upon any indication of denomination of the cash-register the said lock is released, substantially as described.

19. The combination, in a store-service apparatus, of a cash-carrier and a cash-registering apparatus, of a lock normally holding the cash-carrier apparatus from operation and releasing it upon the registration of any amount, substantially as described.

20. The combination, in a store-service apparatus comprising a cash-carrier and a cash-register, of the locking-bar L, having the apertures M M′, the propelling-cord of the carrier, the block L thereon, and connecting mechanism between the bar L″ and the registering mechanism, whereby the cord is normally locked, but is unlocked upon the operation of the registering mechanism, substantially as described.

21. In a store-service apparatus, a cash-register and a car normally held in an inoperative position by means controlled by the register, substantially as described.

22. In a cash-carrier apparatus, the combination of a cash-indicator and a lock for the indicator, and mechanism to release the lock by the operation of the carrier, substantially as described.

23. In a cash-carrier apparatus, the combination of a cash-indicator and connecting mechanism arranged to make the operation of the indicator apparatus dependent upon the presence of the car at the station, substantially as described.

24. In a cash-carrier apparatus and its actuating mechanism, the combination of a lock

for said actuating mechanism and a cash-register adapted to actuate means to actuate said lock, substantially as described.

25. The combination, with a cash-carrier apparatus, of a cash-indicating mechanism and mechanism for making the actuation of the cash-carrier apparatus dependent upon prior actuation of the indicator, substantially as described.

26. The combination, with a cash-carrier, of a cash-indicator and means actuated by the carrier for removing the indication, substantially as described.

27. The combination, with a cash-carrier apparatus, of a cash-indicator and means so actuated by the indicator to release the carrier, substantially as described.

28. The combination of a cash-carrier apparatus, a cash-register, a lock for the registering mechanism, and mechanism for disengaging said lock when the carrier apparatus is in position to be operated, substantially as described.

In testimony whereof I affix my signature, in presence of two witnesses, this 26th day of February, 1890.

JAMES WHITTEMORE.

Witnesses:

M. B. O'DOGHERTY,

GEO. A. GREGG.