(No Model.)

5 Sheets—Sheet 1.

C. W. SWIFT.

CASH REGISTER.

No. 535,563. Patented Mar. 12, 1895.

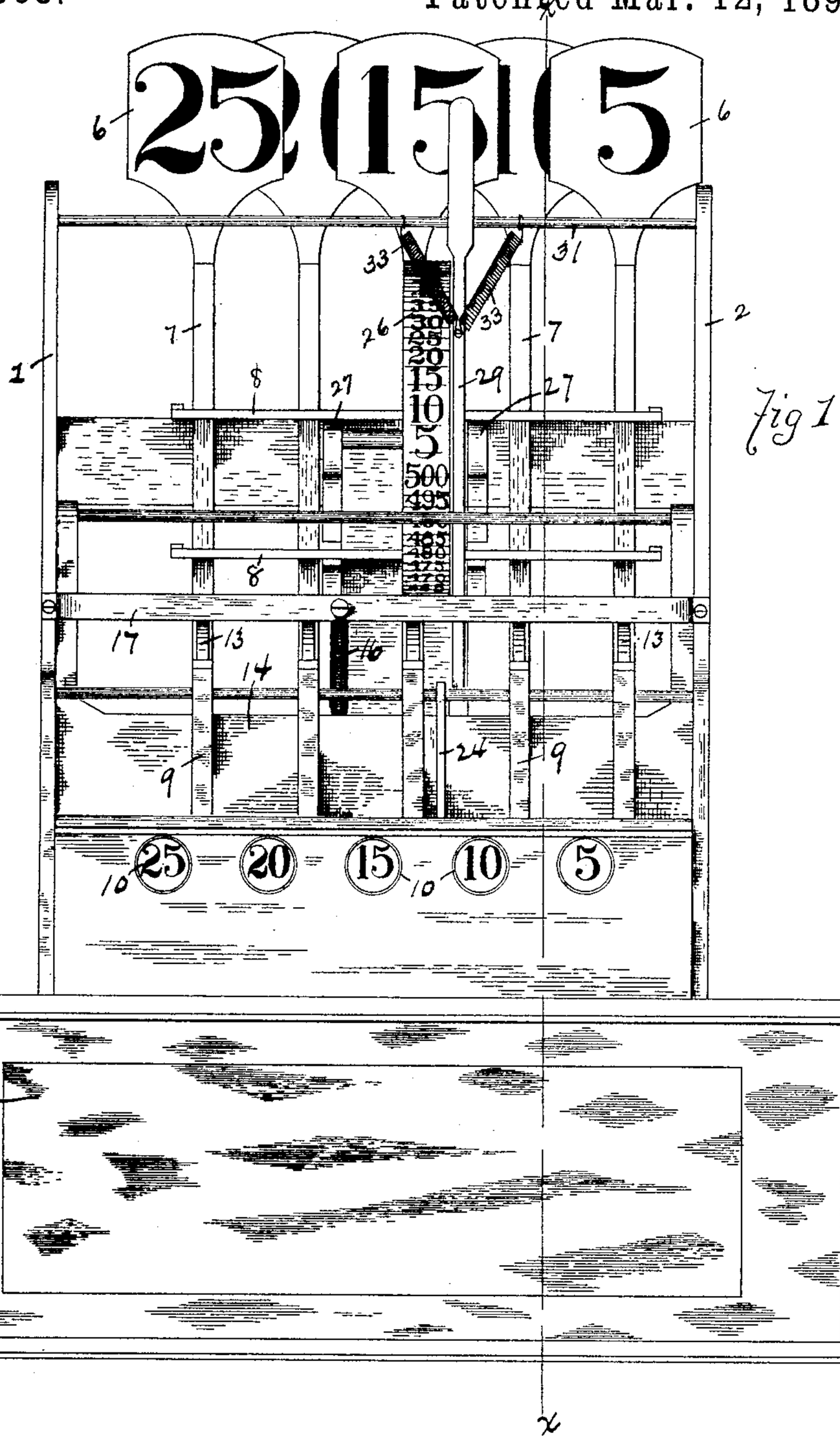

Fig 1

Witnesses
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(No Model.) 5 Sheets—Sheet 2.

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CASH REGISTER.

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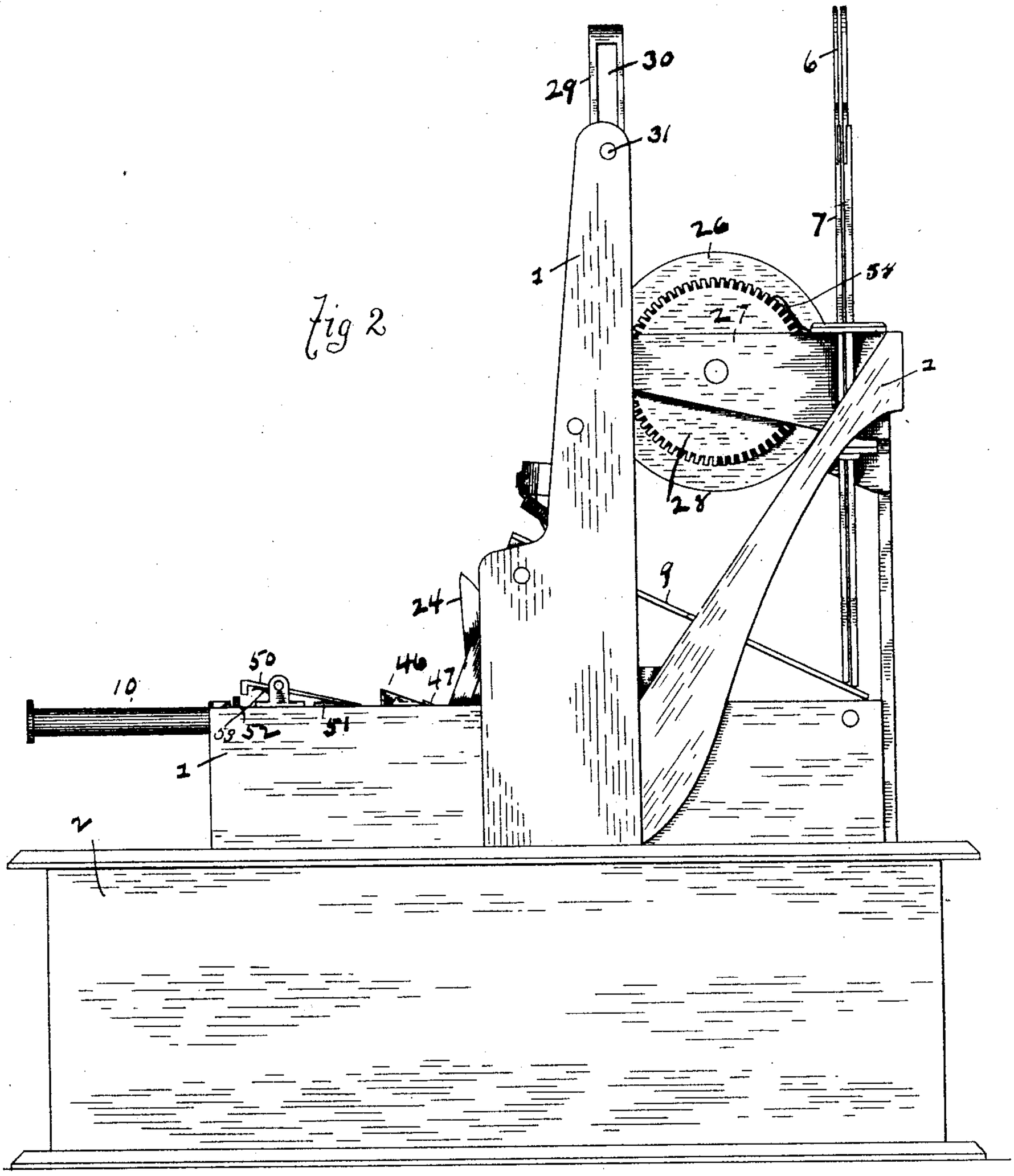
Fig 2



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(No Model.) 5 Sheets—Sheet 3.

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CASH REGISTER.

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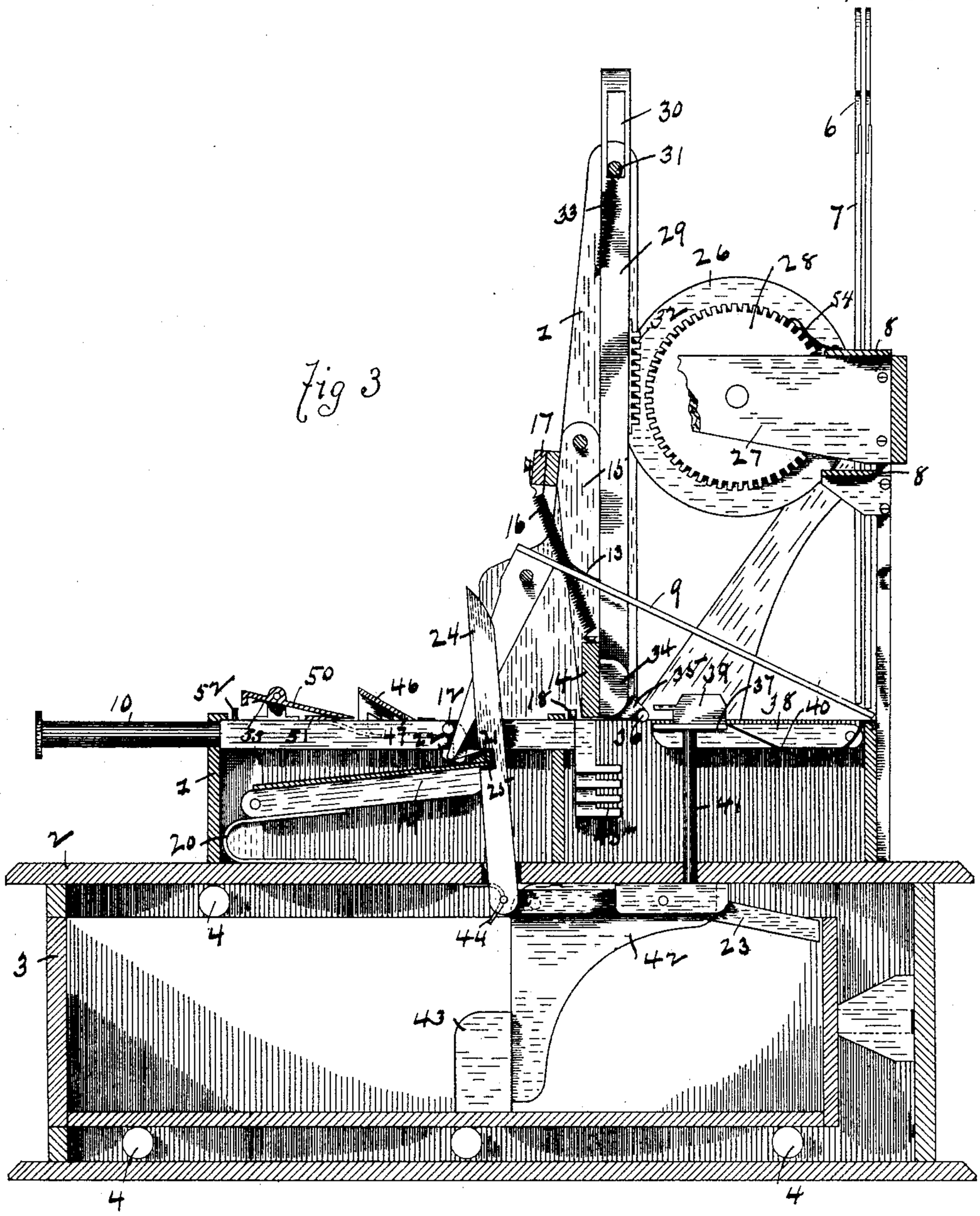
Fig 3



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(No Model.) 5 Sheets—Sheet 4.

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CASH REGISTER.

No. 535,563. Patented Mar. 12, 1895.

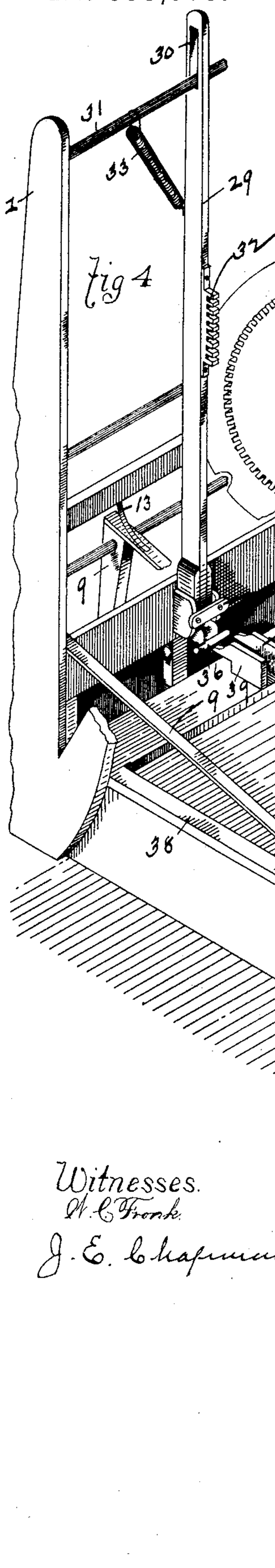

Fig 4

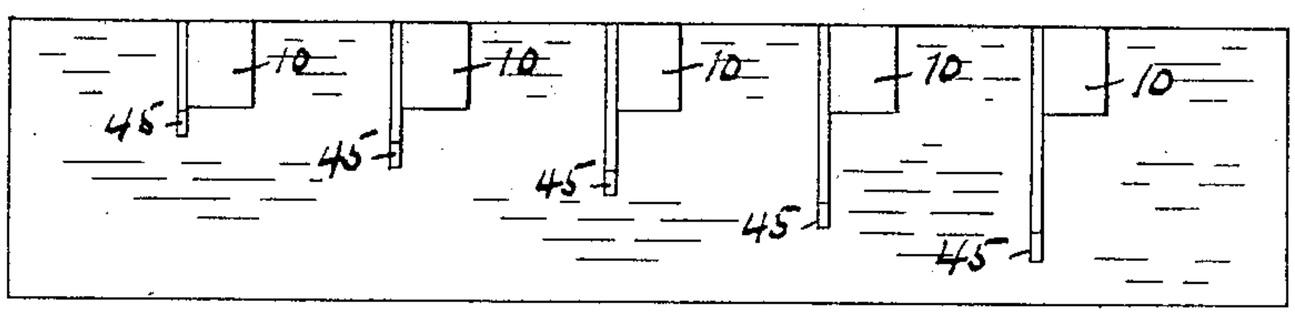

Fig 5

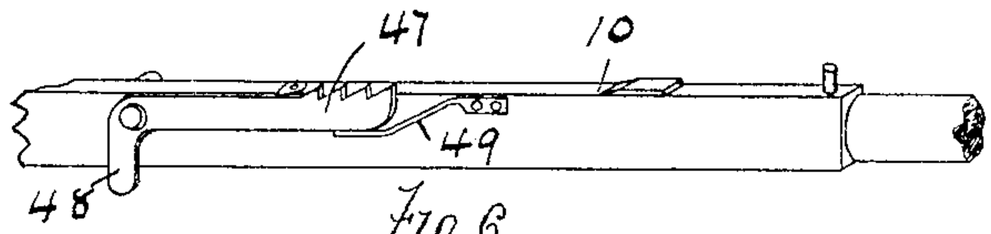

Fig 6

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(No Model.) 5 Sheets—Sheet 5.

C. W. SWIFT.

CASH REGISTER.

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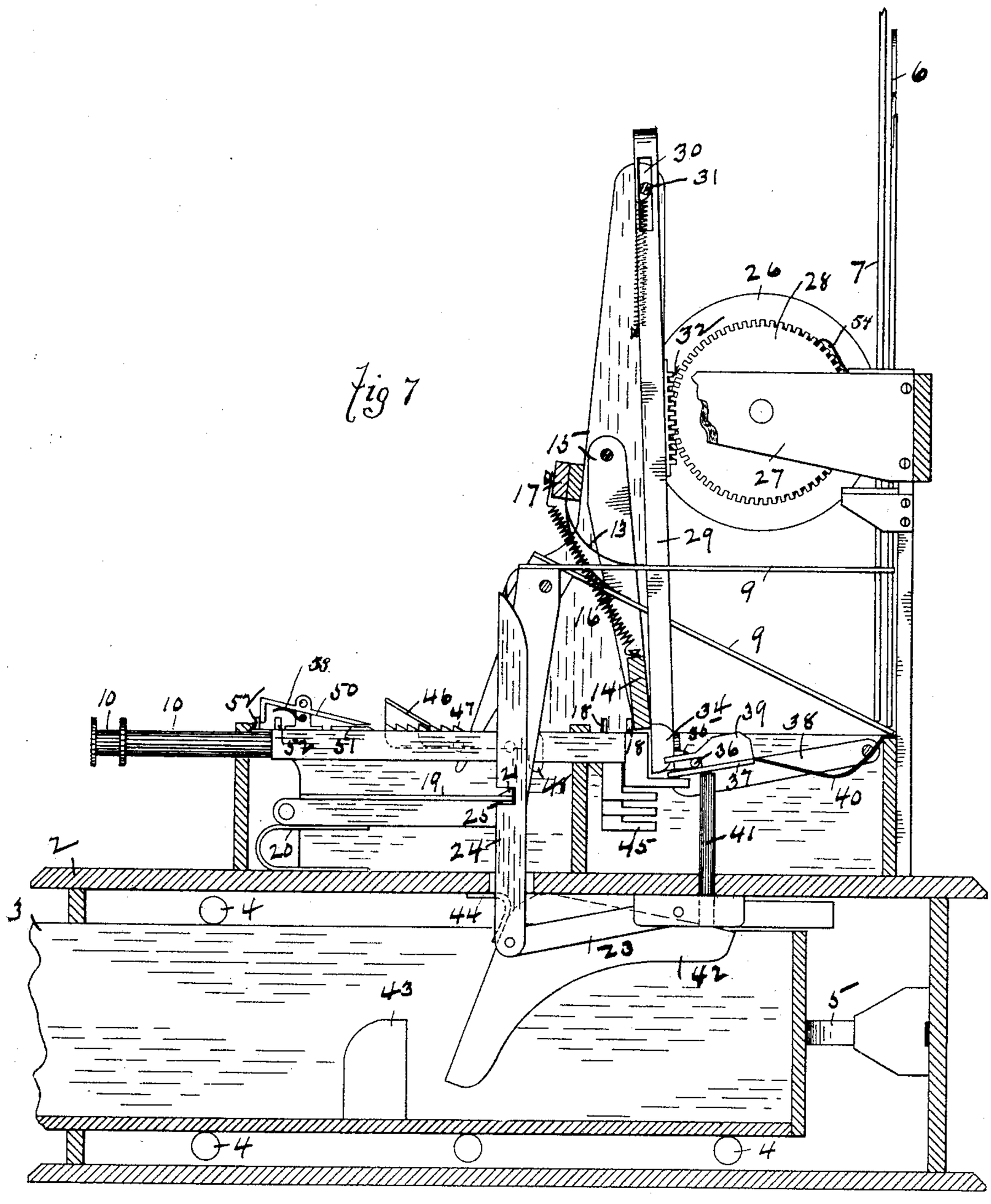
Fig 7



Witnesses:
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UNITED STATES PATENT OFFICE.

CHARLES W. SWIFT, OF NORTHAMPTON, MASSACHUSETTS.

CASH-REGISTER.

SPECIFICATION forming part of Letters Patent No. 535,563, dated March 12, 1895.

Application filed August 2, 1893. Serial No. 482,138. (No model.)

To all whom it may concern:

Be it known that I, CHARLES W. SWIFT, a citizen of the United States, residing at Northampton, in the county of Hampshire and State of Massachusetts, have invented a new and useful Improvement in Cash-Registers, of which the following is a specification, reference being had to the accompanying drawings, forming part thereof.

My invention relates to machines for indicating and registering cash payments of the class in which the indication is made by means of a tag or tags showing the amount of the payment, and the registration is made upon a registering wheel or similar device having its periphery divided into spaces the total number of which varies according to the capacity of the particular machine.

The objects of my invention are to simplify and cheapen the cost of this class of machines; to augment the security thereof against dishonest manipulation; to increase the ease of operation thereof; and to effectually prevent all possibility of mistakes by the registering mechanism.

To these ends, my invention consists in the cash register constructed and operating as hereinafter fully described and particularly pointed out in the claims.

Referring to the drawings, in which like numerals designate like parts in the several views, Figure 1 is a front elevation of a machine embodying the invention, the upper portion of the case being omitted. Fig. 2 is a side elevation thereof. Fig. 3 is a vertical section, taken in the plane of line x—x of Fig. 1, and showing the parts in their normal position or before a key has been operated. Fig. 4 is a partial perspective view, looking from the rear, with the parts in the position shown in Fig. 3. Fig. 5 is a face view of the rear ends of the keys. Fig. 6 is a partial side view of one of the keys. Fig. 7 is a vertical section corresponding to Fig. 3, showing the position of the parts after a key has been operated.

The frame 1 of the machine, which supports most of the operative parts of the latter, is itself supported upon a suitable base 2, in which is located the cash drawer 3, said base being provided with a series of rolls 4 for supporting and affording easy movement to said drawer and with a spring 5 which bears against the inner end of the drawer and tends to force it outwardly. The parts of the machine above the base will be inclosed by a suitable case, which may be of any ornamental shape and will be provided with the usual opening or openings to present the number-bearing tags to the view of the purchaser as they are thrown upwardly by movement of the keys in a manner presently to be described.

The indicating means of the machine devised by me consist of a series of tags 6 carried at the upper ends of a series of tag-rods 7 adapted for free vertical movement in suitable bearings 8 at the rear side of the frame, a series of tag-rod levers 9 pivotally supported upon the frame and having their rear ends projected beneath said tag-rods respectively, and a series of keys 10 mounted at the front side of the frame in such manner as to be capable of free longitudinal movement in a horizontal plane, each of which keys carries a laterally projecting stud 12 adapted to engage the front end of one of said tag-rod levers as the key is moved rearwardly, and, by rocking said lever, cause its opposite end to elevate the tag-rod with which it engages to bring its tag into the view of the purchaser.

Each tag bears a number and the key which operates it bears a corresponding number by means of a button or other suitable device secured to its front end, as represented in Fig. 1.

I have herein shown the machine as being provided with five tags and five keys bearing the numbers 5 10 15 20 and 25 respectively, merely for the purpose of illustrating the operation of the machine, it being understood that any number of keys, arranged in banks in the usual manner, can be employed in the same manner as those herein shown. Each of the tag-rod levers is provided with a spring 13 to return it to its normal position, and the keys are returned to their normal position by a swinging frame 14, supported at each end by arms 15 pivotally connected to the frame at their upper end, and a spring 16 which is connected at one end to a cross-piece 17 of the frame and at its opposite end to said frame and tends to swing the latter in a forward direction. Each key is provided with an upwardly projecting stud 18 at its rear end, which engages said frame as the

key is moved rearwardly and swings the frame in the same direction. The key is then temporarily locked in its retracted position by means soon to be described, and as soon as it is released spring 16 returns the frame to its normal position and the latter, by its engagement with the stud 18, carries the key with it. By thus utilizing a single device to return all of the keys to their normal position I greatly simplify the construction of the machine. To accomplish the three functions of locking the keys in their retracted position, locking the tag-rod levers to cause the tag last displayed to remain in sight until another is operated, and locking the cash drawer in its closed position, I employ a single rocker-plate 19 extending across the machine beneath the keys 10, which plate is pivotally secured to the frame at its front end and has its rear end pressed upwardly by a spring or springs 20. Said rocker-plate is provided with a slight upward projection 21 at its rear edge, the front side of which is beveled or inclined as shown, and each of the keys 10 is provided with a downwardly projecting lug 22 the front side of which is substantially vertical and the rear side of which is beveled or inclined as shown, whereby the rearward movement of a key will cause the inclined face of its lug to engage the inclined face of said projection 21 on the rocker-plate and gradually depress the latter until the lug clears the projection, whereupon the rocker-plate moves upwardly again and securely locks the key in its retracted position by bearing against the vertical face of the lug. Such rearward movement of the key also causes the rearward movement of the front end of its tag-rod lever as before described, and said front end of said lever being thus carried beyond the rear edge of the rocker-plate, it also becomes locked by the upward movement of the latter in such position as to display its tag to the purchaser. The front end of each tag-rod lever is of such length that, while the key is released by the closing movement of the cash-drawer as will next be described, said lever will remain locked by the rocker-plate until the latter is depressed to its full extent by the rearward movement of another key, so that the tag last operated is always in sight until another one is displayed.

To the under side of the top of the base 2 is hung a slightly bent lever 23 the rear end of which is adapted to engage the inner side of the rear end-piece of the cash drawer 3, when the latter is in its closed position, and lock it in such position, as shown in Fig. 3, and to the front end of which is pivotally connected a bar 24, which extends upwardly through an opening in the top of base 2 and is provided in its front edge with a notch or recess 25 to receive the rear edge of said rocker-plate, whereby said bar and the rocker-plate are caused to move in unison. As a result of such connection between lever 23 and the rocker-plate, when the latter is depressed by the inward movement of a key as just described it also depresses the front end of said lever and causes its rear end to release the cash drawer, which is immediately moved outwardly by its spring 5; and, on the other hand, when the cash drawer is moved to its closed position its engagement with the rear end of said lever elevates said end and depresses its front end, thereby also depressing the rocker-plate and releasing the key last operated, the rear end of lever 23 again dropping in front of the back-piece of the drawer and locking it as before. Such conjoint operation between a key and the cash drawer is true of all of the keys.

The means for registering the total number of payments are as follows:—A wheel or disk 26, revolubly supported in brackets 27 projecting forwardly from the rear side of the frame, has its periphery divided transversely into spaces the total number of which depends upon the capacity of the particular machine. In the example herein shown said wheel has one hundred spaces, and its maximum registering capacity is five dollars, each space representing a payment of five cents. Rigidly secured to the side of said wheel is a toothed wheel 28 having one hundred teeth to correspond to the spaces on the wheel. A rack-bar 29 is provided with a slot 30 at its upper end through which passes a rod 31 extending transversely across the frame, whereby said rack-bar is capable of both vertical movement and a swinging movement about said rod as a center to move its teeth 32 into and out of engagement with the teeth of wheel 28, a spring or springs 33, connected at one end to the rod and at their opposite end to the rack-bar, exerting a constant upward tension upon the latter. At its lower end said rack-bar passes loosely through a loop 34 on the swinging frame 14 whereby it is caused to partake of the movements of the latter, and at its extreme lower end it carries the rearwardly projecting foot 35, which foot terminates in the horizontally disposed toe 36. A rocker-bar 37 is carried at the front ends of two arms 38, pivotally connected at their rear ends to the frame, and upon said bar are located two under-cut lugs or similar devices 39, beneath which the toe 36 on the rack-bar is carried when said rack-bar is swung rearwardly to move its teeth into engagement with the wheel 28. A spring or springs 40 exerts a constant downward pressure upon the rocker-bar 37, and a rod 41, bearing at its upper end against the under side of said rocker-bar, passes downwardly through an opening in the top of base 2 and rests at its lower end upon an elbow lever 42, which lever is pivotally hung to the under side of the top of said base and has its lower end located in the path of a lug 43 projecting upwardly from the bottom of the cash drawer. Said lug is so located within the cash drawer that, when the latter is moved inwardly to close it, the former will

swing the elbow lever and, through rod 41, will move the rocker-bar 37 to its highest position, as shown in Fig. 3, and will lock it in such position so long as the drawer remains closed. As soon as the drawer is released by the operation of one of the keys and is thrown by its spring to its open position, spring 40 throws the rocker-bar downwardly and swings the elbow lever to the position shown in Fig. 7, a stop 44 checking the movement of said lever in such direction. In such downward movement the rocker-bar carries with it the rack-bar 29 and rotates wheel 28 and the registering wheel 26. To cause the amount of such rotation of the registering wheel to correspond with the number of spaces thereon indicated by each particular key, each key is provided with a rearwardly projecting foot 45 adapted to be projected into the path of the rocker-bar by the rearward movement of the key and to thereby limit the downward movement of the rocker-bar. The horizontal plane of the feet on the series of keys is so graduated, see Fig. 5, that each succeeding key will permit a sufficiently greater movement of the registering wheel than the key preceding it to correspond with the increased number of units or spaces on said wheel indicated by said succeeding key. In the machine herein shown, for example, the "5" key permits the registering wheel to be moved a distance corresponding to one of its spaces, the "10" key two spaces, the "15" key three spaces, the "20" key four spaces, and the "25" key five spaces, but it will be understood that the ratio of difference in the movement of the registering wheel permitted by the several keys will be made to depend upon the varying amounts indicated by the latter. The action of a key in thus limiting the throw of the rocker-bar is clearly illustrated in Fig. 7.

To prevent the possibility of a partial movement of a key with a view to opening the cash drawer without operating the registering mechanism, I provide means whereby each key is locked against any outward movement, after an initial inward movement thereof, until it has been moved to its extreme inmost position, such means preferably consisting of an inclined stop-plate 46 extending transversely across the machine above the keys, a toothed dog 47 pivotally connected to the side of each key and having a downwardly projecting tail-piece 48, and a spring 49 for exerting upward pressure upon each of said dogs. See Fig. 6. The teeth of said dogs successively engage the edge of the stop-plate, as a key is moved inwardly, and lock the key against outward movement until the key reaches its extreme innermost position, at which point the end of the tail-piece of the dog has been carried beyond the edge of the rocker-plate 19, as shown in Fig. 7. In the return movement of the key, after being released, the engagement of said rocker-plate with said tail-piece rocks the dog upon its pivot and causes its teeth to clear the edge of the stop-plate until the key again reaches its outermost position, when spring 49 returns the dog to its normal position and it is ready to again act as before.

To positively prevent the inward movement of any key before a previously operated key has been released by closing the money drawer and has returned to its normal position, or in other words to prevent the operation of two keys in succession without registering the amount indicated by the second one, I utilize a dog 50 pivotally hung upon the frame above the keys, and provide each of the latter with a cam-shaped projection 51 upon its upper side and with an upwardly projecting stud or lug 52, which are so located that the inward movement of any key will cause its projection 51 to raise the rear end of the dog and depress its front end, thereby moving said front end thereof into the path of the studs 52 of all of the remaining keys and preventing inward movement of the latter. The dog is held in such position by the projection on the operated key until the latter returns to its normal position, whereupon a spring 53 depresses the rear end of the dog and raises its front end out of the path of the studs 52, as shown in Fig. 3, and any key is then free to be operated.

The operation of the machine thus constructed is as follows:—Assuming the parts to be in their normal position as shown in Fig. 3 and a five cent sale to have been made, the operator presses the "5" key inwardly. Such movement of said key causes stud 12 to operate the tag-rod lever 9 and, through the latter, raise the "5" tag into view of the purchaser; causes stud 18 to swing frame 14 rearwardly, thereby moving the teeth of the rack-bar into engagement with wheel 28 and carrying the toe 36 of said bar beneath the overhanging lugs 39 on rocker-bar 37; and causes the lug 22 to gradually depress rocker-plate 19, thereby depressing the front end of lever 23, through bar 24, and raising its rear end. As the key reaches the end of its inward movement the rear end of lever 23 is raised far enough to release the cash drawer, which is immediately thrown to its open position by its spring 5. Elbow lever 42 being then free to move, spring 40 swings rocker-bar 37 downwardly until it engages the foot 45 of said key, and, carrying with it the rack-bar, moves the registering wheel one space. As soon as the forward movement of the cash drawer releases the rear end of lever 23, spring 20 returns rocker-plate 19 to its highest position, in which it locks the key in its retracted position and the tag in its elevated position. The parts now occupy the position shown in Fig. 7 and change can be made from the cash drawer if desired. While the parts remain in this position the dog 50 prevents the inward movement of any other key, as before described. The operation is completed by pushing the cash drawer inwardly to its

closed position, such movement first causing the back-piece of said drawer to raise the rear end of lever 23 and depress its front end, thereby also depressing rocker-plate 19 and releasing the key, and causing lug 43 on the drawer to actuate lever 42 to return rocker-bar 37 to its highest position. Spring 16 swings frame 14 forwardly as soon as it is released thereby returning the key to its normal position and moving the teeth of the rack-bar out of engagement with wheel 28, but the tag-rod lever, as before stated, is still retained behind the rocker-plate until the operation of another key. As soon as the back-piece of the drawer clears the end of lever 23 the latter drops in front of it and again locks the drawer in its closed position, and the operation is completed.

It will be seen that the registering wheel is brought to a full stop upon the completion of its movement and that its operating medium is entirely disconnected from it except during its movement, thereby preventing all danger of inaccuracy in the registering operation of said wheel. To prevent accidental movement of said wheel from any cause, such as a jar of the machine I prefer to provide it with a detent pawl 54, see Fig. 3, of the usual form. It will be noted also that no registration can be made by said wheel except when the drawer is closed and locked, and that the drawer can be opened only by the operation of a key, which facts taken in connection with the further fact that a key when pushed inwardly is locked in such position until the drawer is again closed and locked, afford a perfect safeguard against dishonest practices in connection with the machine.

In machines having a greater capacity than the one herein shown a train of registering wheels can be employed as is customary in this class of machines, the units wheel of the train being operated in the manner herein described.

Attention is called to the fact that the machine herein described is composed of a small number of parts, is exceedingly strong and durable, and is easily operated.

It will be obvious that the leading features of the machine devised by me can be embodied in variously differing forms from those herein shown without departure from the spirit of my invention.

Having thus fully described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a cash register, the combination with a series of keys and indicating devices actuated thereby, of a spring-actuated rocker-plate for locking said keys in a retracted position, a cash drawer, a bent lever having one end thereof located in the path of the back-piece of said drawer, and means for connecting the opposite end of said lever with said rocker-plate, substantially as set forth.

2. In a cash register, the combination with a series of keys and corresponding indicating devices actuated thereby, means for locking said keys in a retracted position, a cash drawer, means for locking said drawer in its closed position, and intermediate connections substantially as described between said drawer and key locking means whereby the latter is operated to release a key when the drawer is closed and locked, substantially as set forth.

3. In a cash register, the combination with a series of keys a series of indicating devices, and a cash drawer, of a spring-actuated rocker-plate, and intermediate connections substantially as described whereby said rocker-plate is caused to lock said keys in a retracted position, to lock said indicating devices in an exposed position, and to lock the cash drawer in its closed position, substantially as set forth.

4. The combination with the longitudinally movable keys and the cash drawer, of the registering wheel and its toothed operating wheel, the rack-bar for operating the latter wheel, the spring-actuated rocker-bar for actuating said rack-bar, and means substantially as described whereby said rocker-bar is locked against downward movement when the cash drawer is in its closed position, substantially as set forth.

5. The combination with the registering wheel and the rack-bar and toothed wheel for operating the same, of the spring-actuated rocker-bar for causing downward movement of said rack-bar, and the series of keys provided with rearwardly projecting portions occupying varying horizontal planes to limit the downward movement of said rocker-bar, substantially as and for the purpose described.

6. The combination with the registering wheel and its toothed wheel and the rack-bar supported substantially as described, of the swinging frame loosely embracing said rack-bar at its lower end, a spring pressing said frame in a forward direction, the spring-actuated rocker-bar for exerting downward movement of said rack-bar, and the series of longitudinally movable keys provided with means for engaging the front side of said swinging frame and for limiting the downward movement of said rocker-bar, substantially as set forth.

7. The combination with the keys 10 provided with feet 45 and studs 18, of registering wheel 26 and its toothed wheel 28, rack-bar 29 provided with toe 36, a spring for exerting upward movement of said rack-bar, swinging frame 14 loosely embracing the rack-bar at its lower end, a spring for swinging said frame in a forward direction, rocker-bar 37 carrying the undercut lugs 39, a spring for swinging said rocker-bar downwardly, cash drawer 3 carrying the lug 43, elbow lever 42, and rod 41, arranged and operating substantially as set forth.

8. The combination with keys 10 carrying

studs 22, of tag-rods 7, tag-rod levers 9, and spring-actuated rocker-plate 19, arranged and operating substantially as described.

9. The combination with the keys 10 carrying feet 45 lying in varying horizontal planes, of registering wheel 26 and its toothed wheel 28, rack-bar 29, a spring for imparting upward movement to said rack-bar, and the spring-actuated rocker-bar 37 adapted to operatively engage said rack-bar and to impart downward movement thereto, substantially as described.

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Witnesses:
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