

(No Model.)

6 Sheets—Sheet 1.

J. MALLMANN.
CASH REGISTER.

No. 598,266.

Patented Feb. 1, 1898.

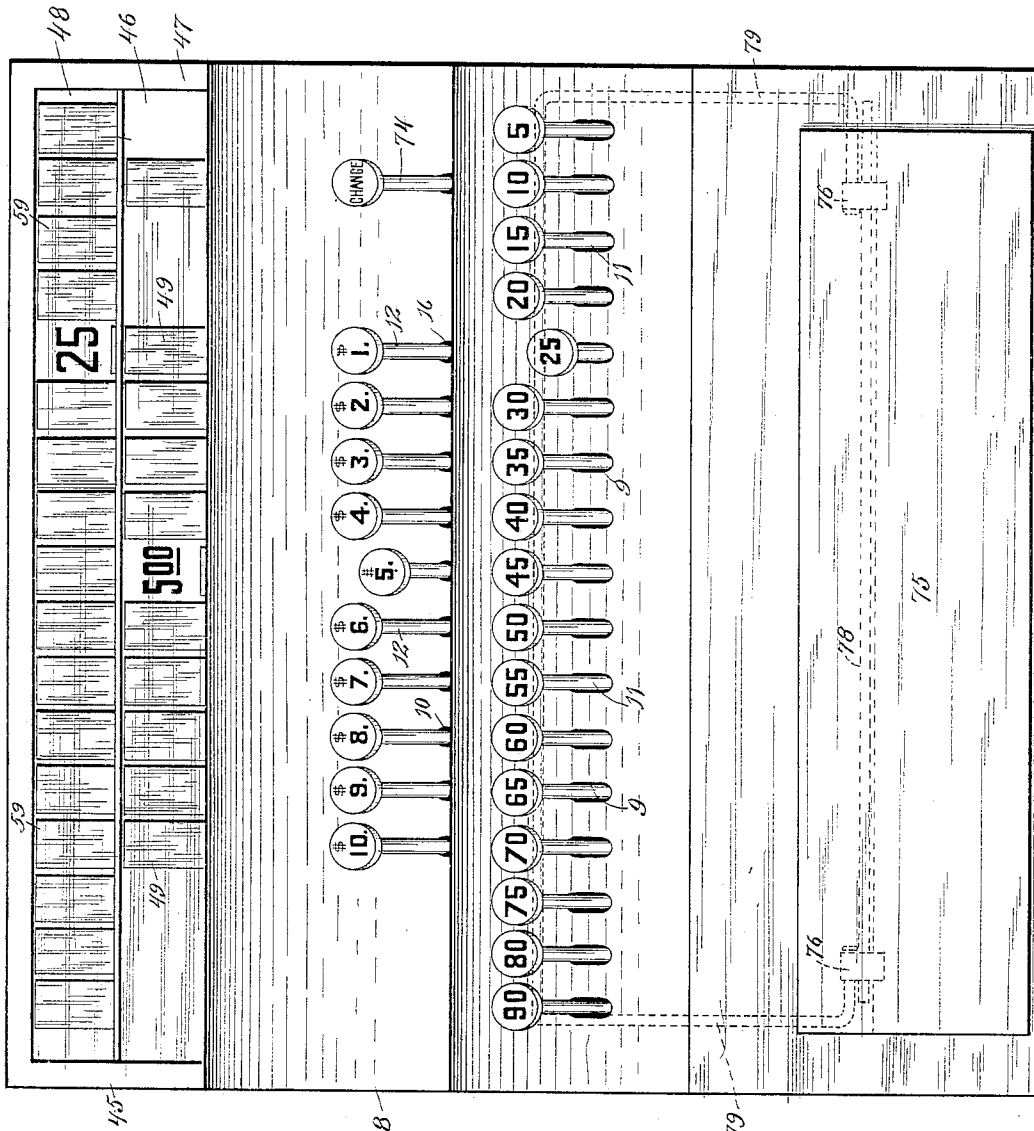


Fig. 1.

Witnesses.
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Inventor.
James Mallmann.
By *Benedict and Morsell,*
Attorneys.

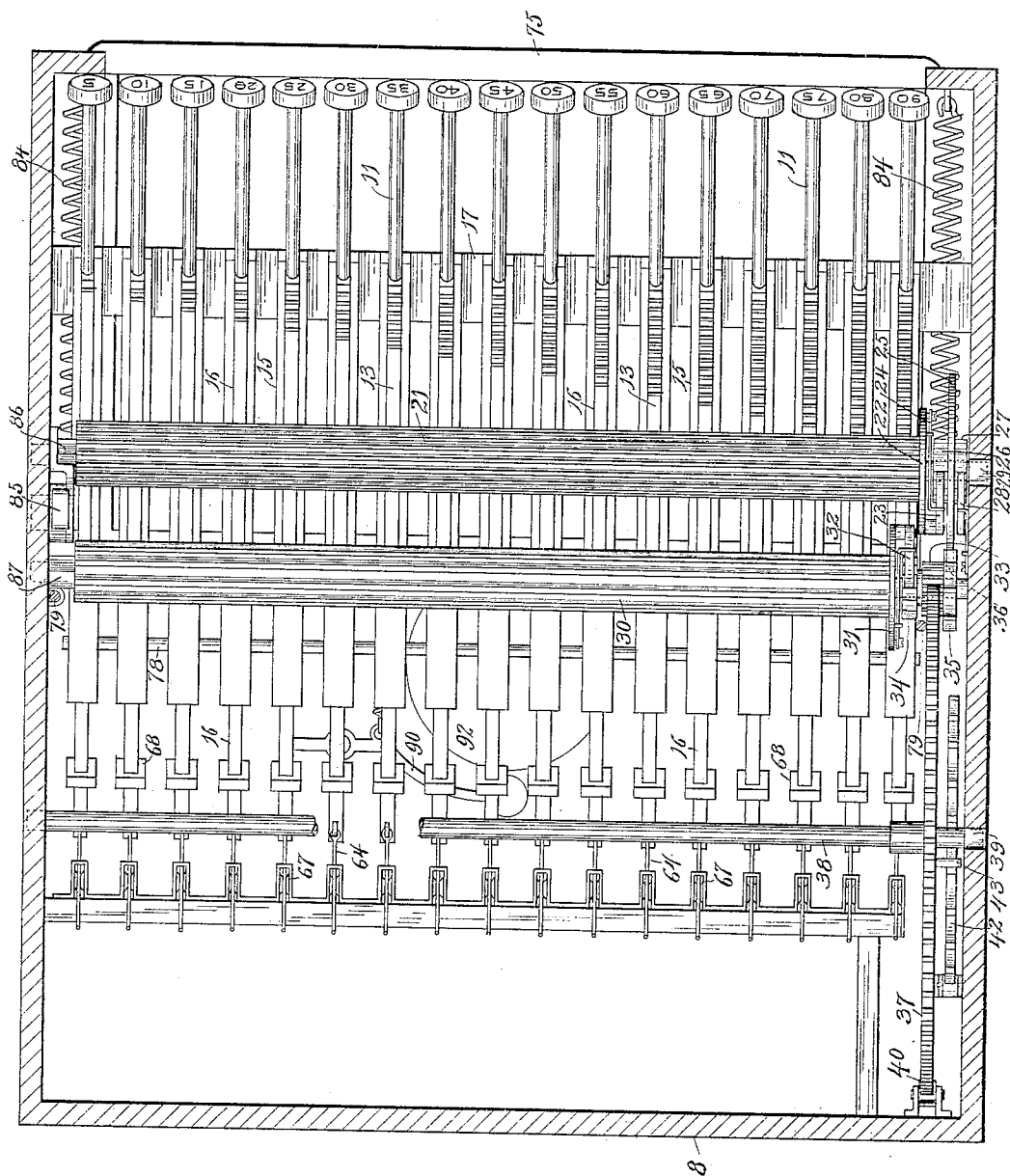
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J. MALLMANN.
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6 Sheets—Sheet 2.

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Witnesses.

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Fig. 2.

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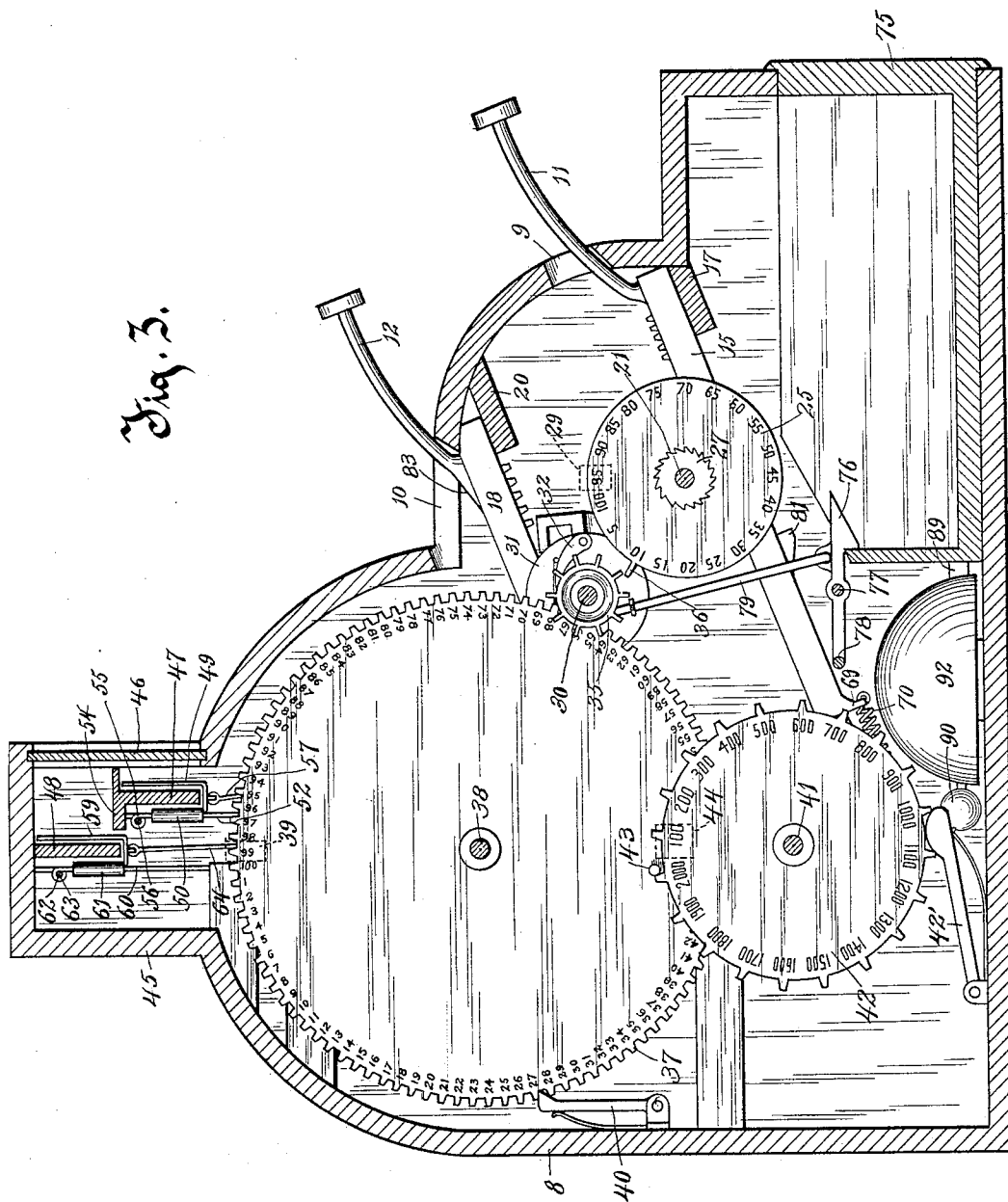
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6 Sheets—Sheet 3.

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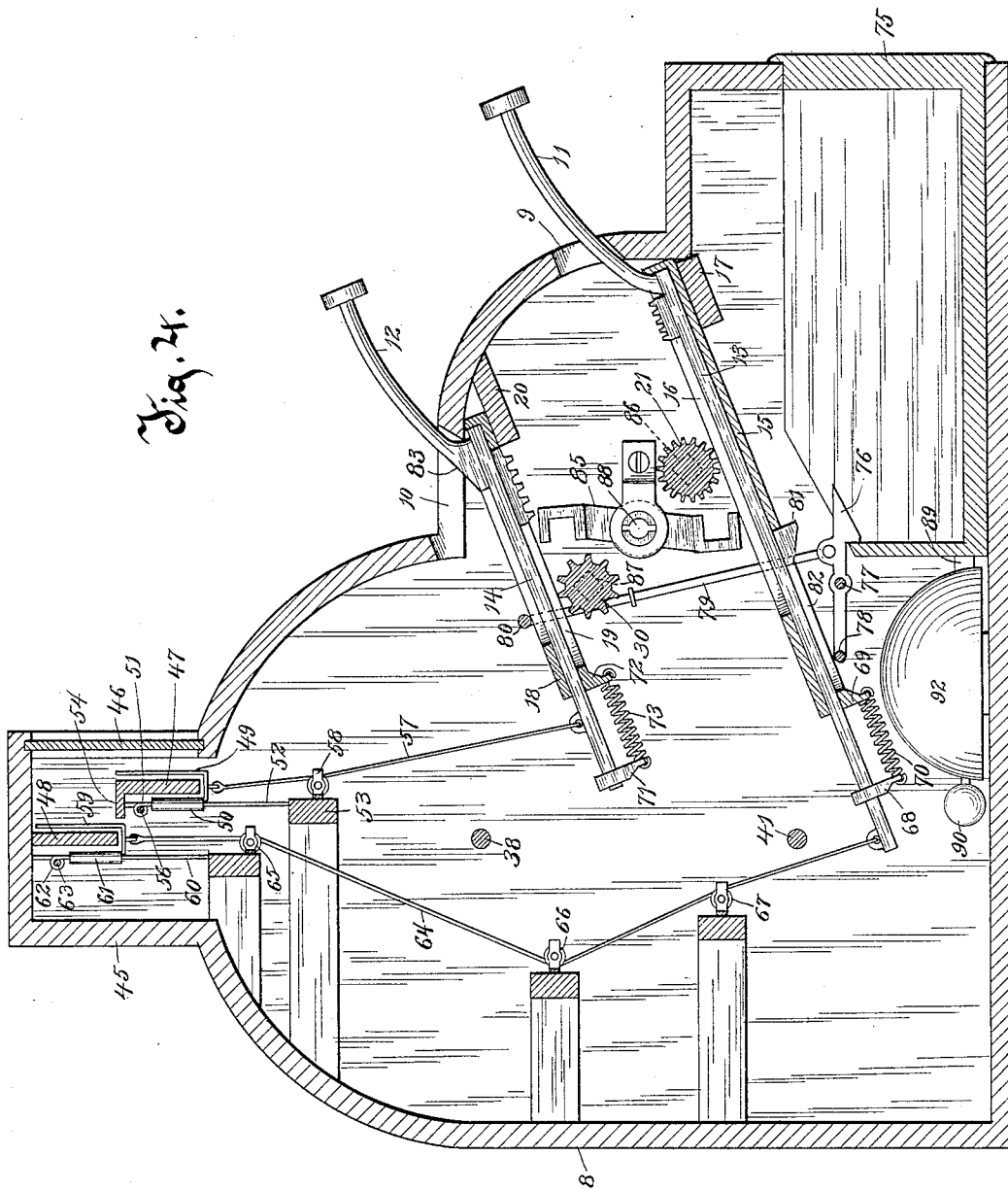
(No Model.)

6 Sheets—Sheet 4.

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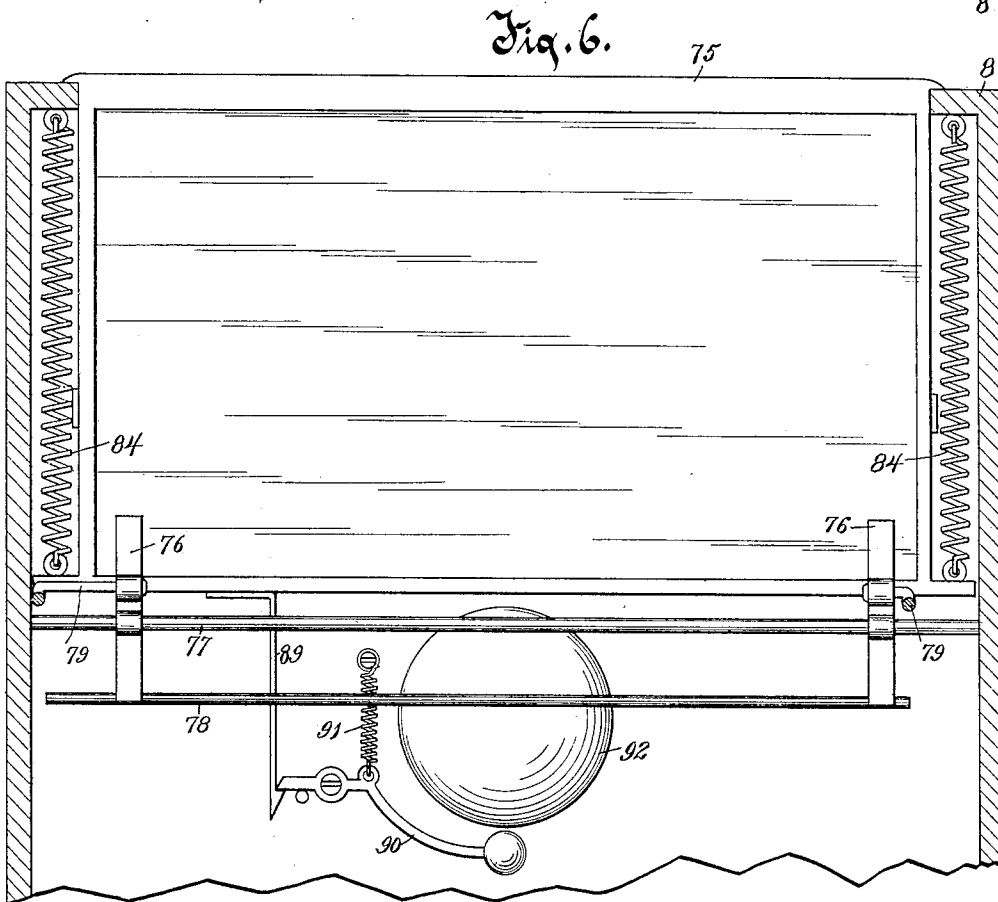
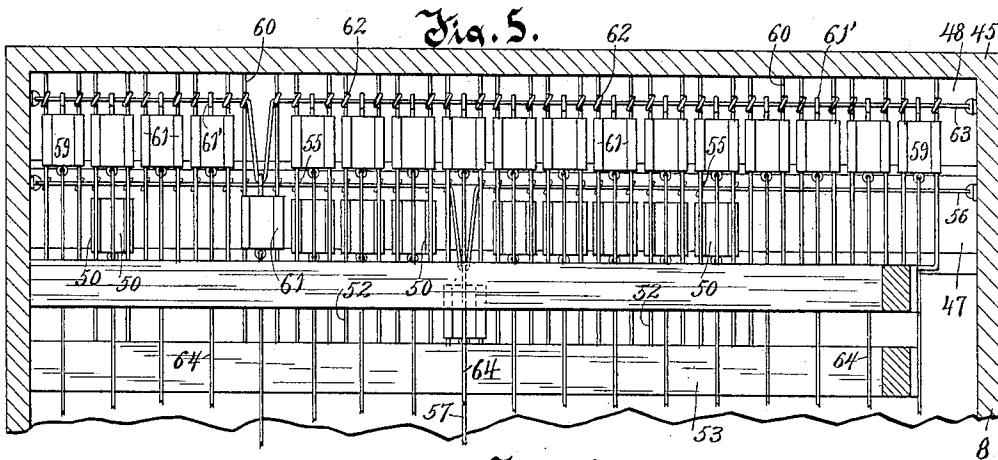
(No Model.)

6 Sheets—Sheet 5.

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Fig. 8.

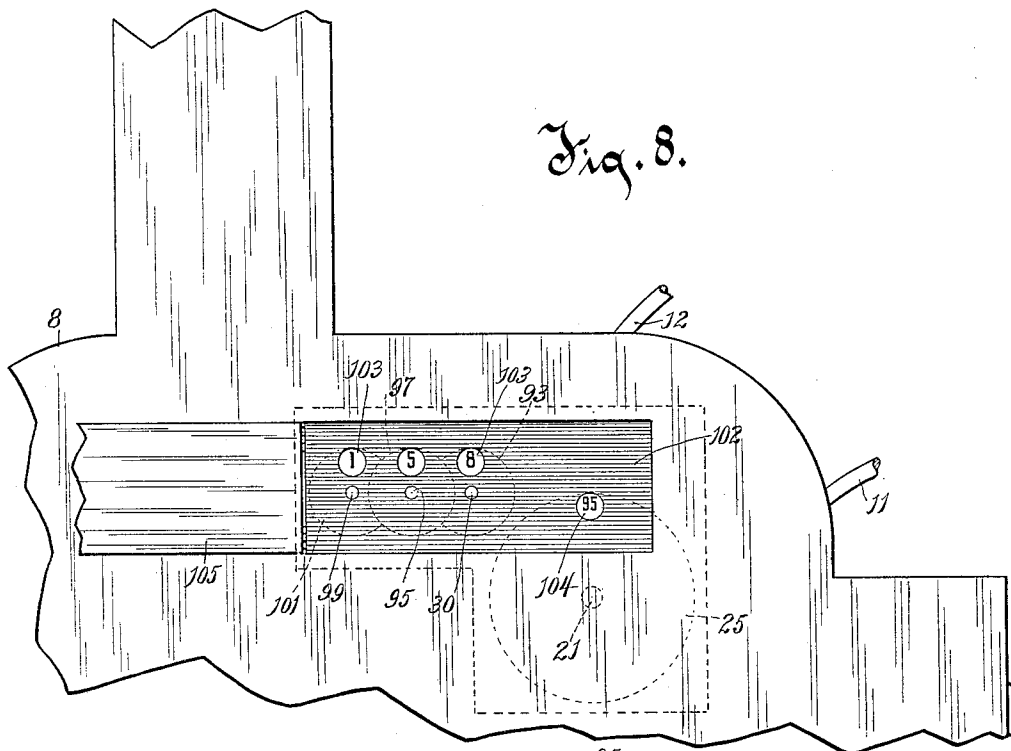


Fig. 9.

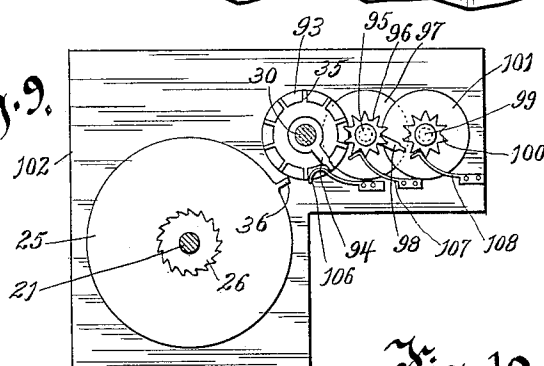
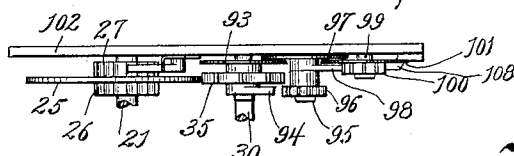


Fig. 10.



Witnesses.

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UNITED STATES PATENT OFFICE.

JAMES MALLMANN, OF SHEBOYGAN, WISCONSIN, ASSIGNOR TO THE
SHEBOYGAN REGISTER COMPANY, OF SAME PLACE.

CASH-REGISTER.

SPECIFICATION forming part of Letters Patent No. 598,266, dated February 1, 1898.

Application filed March 25, 1897. Serial No. 629,190. (No model.)

To all whom it may concern:

Be it known that I, JAMES MALLMANN, of Sheboygan, in the county of Sheboygan and State of Wisconsin, have invented a new and
5 useful Improvement in Cash-Registers, of which the following is a description, reference being had to the accompanying drawings, which are a part of this specification.

My invention has relation to improvements
10 in cash-registers.

The primary object of the invention is to simplify the construction and operation of the several parts and lessen the cost of manufacture.

15 With the above primary object in view the invention consists of the devices and parts or their equivalents, as hereinafter more fully set forth.

In the accompanying drawings, Figure 1 is
20 a front elevation of the complete machine, showing two of the keys pressed inwardly. Fig. 2 is a plan view with parts in section and parts broken away. Fig. 3 is a side view, certain parts being in section and the end piece
25 of the outer casing removed. Fig. 4 is a central transverse section. Fig. 5 is a rear view of the indicating mechanism. Fig. 6 is a detail view showing means for opening the cash-drawer and sounding the alarm. Fig. 7 is a
30 cross-section of one of the rack-bars and its boxing. Fig. 8 represents a modification showing a detail of the side of the machine with the door in the side of the casing open to disclose the inner sight-openings of the plate,
35 certain parts in the view being broken away. Fig. 9 is a view looking against the inner sides of the series of index-wheels of Fig. 8, and Fig. 10 is a plan view of the gearing.

Referring to the drawings, the numeral 8
40 indicates an outer casing which is of the same general form as the casings of cash-registers now in common use. The central bulged portion of the front of this casing is provided with two sets of elongated openings, the openings of each set being arranged in a longitudinal line. The openings of the lower set are
45 indicated by the numerals 9 and those of the upper set by the numerals 10. Through the lower openings pass keys 11, adapted for registering cent sales, and through the upper
50 openings pass keys 12, adapted for register-

ing the dollar sales. In the accompanying drawings I have shown seventeen keys for registering sales of a fractional part of a dollar and ten keys for registering dollar sales. 55 It is obvious, however, that any desired number of keys may be employed. Each key is provided upon its outer end with a button upon which is marked the amount the key is adapted to register. The lowest amount 60 shown on the keys 11 is five cents, and this amount is increased five units or cents with each successive key, with the exception of the last key of the series, which shows ninety cents and is therefore ten units greater than the 65 preceding key. The dollar-keys run in regular sequence from "\$1" to "\$10." The different sets of keys, respectively, are provided at their inner ends with projecting bars, those of the lower set of keys being indicated by the numerals 13 and those of the upper set 70 by the numerals 14. The upper edges of the bars 13 are provided with upwardly-extending teeth, there being on each bar one tooth for each five units expressed on the key. It 75 follows, therefore, that the bar of the five-cent key has one tooth, that of the ten-cent key two teeth, and so on, increasing one tooth for each additional five units denoted by the successive keys, the bar of the terminal or 80 ninety-cent key having eighteen teeth. The rack-bars 13 are adapted to be reciprocated in downwardly-slanting boxes 15, preferably of rectangular form, the tops of said boxes being provided with elongated slots 16 for the 85 passage of the teeth of the bars therethrough. The outer ends of these boxes are secured to and supported by cleats or strips 17. The bars 14 of the upper keys have the projecting teeth formed upon the under edges thereof. 90 These teeth in the case of the upper bars correspond exactly to the amount each key represents—that is to say, the bar of the "\$1" key has one tooth, the bar of the "\$2" key two teeth, and so on, increasing one tooth for 95 each key representing a higher denomination. These rack-bars 14 also work in boxes 18. The under sides of said boxes are provided with elongated slots 19, through which the teeth project. These boxes are likewise 100 secured to and supported by cleats or strips 20. The numeral 21 indicates a shaft located

within the casing of the machine and extending throughout the length of the casing and having its trunnions journaled in the end pieces of said casing. This shaft is formed throughout its length with a series of longitudinal teeth and at one end has mounted fast thereon or integral therewith a disk 22. This disk has pivoted thereto a spring-pressed pawl or dog 23, the spring being indicated by the numeral 24. Mounted loosely upon the journal of the shaft adjacent to the outer face of this disk are three wheels, which are fast together or made integral, the central one being an index-wheel and designated by the numeral 25 and the inner and outer wheels being ratchet-wheels and designated, respectively, by the numerals 26 and 27. The inner ratchet-wheel 26 is adapted to be engaged by the pawl 23 and the outer ratchet-wheel 27 is adapted to be engaged by a spring-pressed dog or pawl 28, said dog or pawl being pivoted to the inner side of the end piece of the casing of the machine. The outer face of the index-wheel is shown as provided circumferentially with a series of numbers running from "5" to "100," and one of these numbers is always visible through a sight-opening 29 in the end piece of the casing.

The numeral 30 indicates an upper shaft within the casing of the machine and extending from end to end thereof, its trunnions being journaled in the end pieces of the casing. This shaft is also provided with longitudinal teeth throughout its length and has fast on one end thereof a disk 31. This disk carries a pivoted spring-pressed dog or pawl 32. Mounted upon the trunnion of the shaft next to the outer face of this disk are three integral wheels, the central one being a gear-wheel and designated by the numeral 33 and the inner and outer ones being respectively a ratchet-wheel and a toothed wheel, (designated, respectively, by the numerals 34 and 35.) The spring-pressed dog 32 is adapted to engage with the ratchet-wheel 34, and the toothed wheel 35 is adapted to be actuated at regular intervals by means of a tappet 36, projecting from the periphery of the index-wheel 25. The central gear-wheel 33 meshes with a large geared index-wheel 37, which is fast on a transverse shaft 38. The outer face of this wheel is provided circumferentially with a series of numbers running from "1" to "100," any one of which numbers is visible through a sight-opening 39, arranged in the end piece of the outer casing. This large index-wheel is held to adjusted position by means of a spring-pressed dog 40, engaging the peripheral teeth thereof. Below shaft 37 is another transverse shaft 41, and this shaft has mounted fast thereon a toothed index-wheel 42, said wheel being adapted to be rotated one tooth with each complete revolution of the wheel 37 by means of a pin 43, projecting from the face of wheel 37 and engaging a tooth of wheel 42. The toothed index-wheel 42 is provided circumferentially on one face with a series of

numbers running from "100" to "2,000," which numbers are adapted to be successively visible through a sight-opening 44 in the end piece of the casing. A dog 42' prevents the wheel 42 from rotating backward.

The top of the outer casing is provided with an upward extension 45, the front of which being provided with an opening covered by a strip of glass or transparent material 46. Arranged within this top extension is a lower longitudinal strip 47, having the different dollar-marks thereon to correspond with the dollar-keys, and also an upper longitudinal strip arranged a slight distance back of the lower strip and having a series of numbers thereon corresponding to the numbers on the lower keys or keys representing the fractional parts of a dollar. Both of these strips, as will be clearly seen from Figs. 1, 3, and 4, are visible through the glass cover. The dollar denominations of the lower longitudinal strip are adapted normally to be obscured by means of a series of covering-plates 49, there being a separate plate for each separate denomination. These plates at their lower ends are bent rearwardly beneath the lower edge of the strip 47 and thence upwardly back of said strip, thereby forming an approximate U shape. The back or rear portion is bent at its side edges into loops 50 50 and is also formed or provided with an eye 51. Two rods or wires 52 52 are provided for each of these loops, said wires connected at their lower ends to a longitudinal beam 53 and at their upper ends to a rearwardly-extending flange 54 from the lower longitudinal strip 47. These wires at points just above the upper edge of the loops 50 are twisted so as to form eyes 55. Through these registering eyes and through the eyes 51 a cord 56 passes, the ends of said cords being attached to the end pieces of the casing. Other cords 57 are connected to the lower ends of the U-shaped covering-plates 49 and pass over guide-pulleys 58, connected to the longitudinal beam 53, the lower ends of said cords being connected to the inner ends of the rack-bars 14, which ends of said bars project beyond the boxes 18. A similar arrangement is provided for the upper longitudinal strip 48. Covering-plates 59, of identically the same construction as the plates 49, are provided, and wires 60 60 pass through the rear loops 61 of said plates. These wires are likewise formed with the eyes 62 and the rear portion of each U-shaped covering-plate with an eye 61', through which a cord 63 passes. Cords 64 are also connected to the lower ends of the plates 59 and pass over pulleys 65, the lower ends of said cords passing over guide-pulleys 65, 66, and 67, being finally connected to the projecting inner ends of the rack-bars 13.

It will be noticed that near the inner end each rack-bar 13 is provided with a downwardly-extending finger or lug 68, and the inner end of each box 15 is provided with a depending lug 69. These lugs are connected

by a coiled spring 70. Each of the upper rack-bars 14 is provided with a similar depending finger or lug 71 and each upper box 18 with a depending lug 72, said lugs being

5 connected by means of a coiled spring 73.
 Fig. 1 of the drawings shows the keys for a twenty-five-cent sale and for a five-dollar sale as pushed inwardly. In explanation of the operation, if, for instance, a twenty-five-cent
 10 sale is made the key with the number "25" thereon is pushed inwardly. The rack-bar of this key has five teeth thereon. As this key is thus pushed inwardly its rack-bar is moved and is guided in its boxing, and after
 15 it has traveled a certain distance inwardly the five teeth thereof engage with the teeth of the shaft 21 and has the effect of turning said shaft a corresponding number of teeth. As
 20 this shaft is thus turned the disk 31, fast on one end thereof, is rotated therewith, and the rotation of this disk is communicated to the inner ratchet-wheel 34 by means of the spring-
 25 pressed dog 32. Inasmuch as the ratchet-wheel 34, central index-wheel 33, and outer ratchet-wheel 35 are integral it necessarily follows that when wheel 34 is rotated in the
 30 manner just explained all three of said wheels are rotated together. The index-wheel will therefore be rotated the required distance to
 35 bring the proper number to view through the sight-opening 39. This index-wheel 33 therefore enables it to be readily determined at any time of the day, either at or before the
 40 close of a day's business, the aggregate amount of sales of a fractional part of a dollar, and the spring-pressed dog 40, which engages the
 45 wheel 36, prevents the three wheels from rotating backward, whereby the index-wheel is always maintained at adjusted position. If
 50 any other key of the lower set denoting sales of a fractional part of a dollar is manipulated, the same operation exactly takes place as that just described, the index-wheel 36 being in
 55 each instance rotated a sufficient distance to bring the proper number to view through the sight-opening 39 in order to indicate the aggregate amount of sales less than a dollar.
 60 In thus pushing in one of the keys 11 the coiled spring 70 is necessarily expanded, and when finger-pressure on the key is released
 65 the action of the spring in returning to its normal position will necessarily cause the rack-bar to be reciprocated outwardly in its boxing and thus returned to its normal position,
 while at the same time the shaft 21 is also rotated back to its former position by the action of the teeth of the rack-bar. When these
 rack-bars are pushed in, another action also takes place. For instance, if the same twenty-five-cent
 key is pushed inwardly the inner end of the rack-bar of said key is necessarily lowered, owing to the downward slant of the guide-boxing of the lever. This has the effect of exerting a pull on the cord 64 and causing a down movement of the covering-plate 59, so as to disclose the number "25," as shown in Fig. 1, the plate being guided in

its down movement by reason of the wires 60, which pass through the rear loops of the plates. If now another sale is made, say of forty-five
 70 cents, the proper key for this amount is pressed inwardly, and this will have the effect of causing the rack-bar of the forty-five-cent key to pull downwardly on the cord 64,
 75 which is connected to the plate 59 which covers the number 45. It will be understood that there is sufficient slack in the cord 63, which passes through the eyes of the wires 62 and the eyes at the back of the covering-plates,
 80 to permit one of these covering-plates to be thus pulled downwardly. Now the moment the cord regulating the forty-five-cent covering-plate has been operated upon as just described, and the plate covering the number
 85 "45" has been lowered to expose said number, then the slack or downwardly-extending loop of the cord 63, which was previously made by pulling down the covering-plate of the
 90 number "25," is taken up and said plate for the number "25" thereby raised, so as to again cover said number. It will be apparent from this that with each manipulation of the
 95 key the number formerly exposed to view is covered and the number indicating the last sale exposed.

In regard to the keys for registering dollar-sales the same operation exactly as that described in regard to the keys for registering
 100 sales of a less amount than a dollar takes place—that is to say, the teeth on the rack-bars of a dollar-key operate to turn the upper toothed shaft 30, and the disk fast at one
 105 end of this shaft through the pivoted dog 32 causes the inner ratchet-wheel 34, together with the central gear-wheel 33 and the outer ratchet-wheel 35, which, as previously explained, are rigid with each other, to be
 110 rotated together. The rotation of the central gear-wheel 33 is communicated to the large toothed index-wheel 37, and this wheel is thereby rotated the required distance to expose to view through the sight-opening 39
 115 the amount of the sale. The index-wheel 37 therefore enables one to determine at any time the aggregate amount of dollar-sales made. This index-wheel 37 will register dollar-sales to the amount of one hundred dollars.
 120 In order to carry this aggregated dollar registration farther, I provide the toothed index-wheel 42, which has numbers on its face running from "100" to "2,000." As
 125 previously explained, each time the index-wheel 37 makes one complete revolution the pin 43 of said index-wheel 37 will contact with one of the teeth of the wheel 42 and
 130 move said wheel the distance of one tooth, so as to register one hundred dollars for each complete revolution of the wheel 37. It will be of course understood that this system could be carried on indefinitely, inasmuch as the wheel 42 could also be provided with a projecting
 pin adapted to engage a tooth of another wheel similar to the wheel 42 upon each complete revolution of said wheel 42. After a

sufficient number of sales of less than one dollar have been made to aggregate one dollar the index-wheel 25 will have made one complete revolution and the tappet 36 will have been brought to a position to contact with one of the teeth of the outer toothed wheel 35. The turning of this wheel 35 will necessarily turn the other two wheels 33 and 34, and the latter by reason of its intermeshing with the large index-wheel 37 will turn said wheel one tooth. It will therefore be seen that whenever the aggregate amount of sales registered by the lower keys foot up one dollar this amount is transferred from the index-wheel 25 to the large index-wheel 37.

I also provide an extra key 74, which is similar in all respects to the other keys excepting that the bar thereof has no teeth with which to engage the toothed shaft 30. The button on the outer end of this key has the word "Change" thereon, and the bar of the key is connected up to a covering-plate in the same manner as the other bars. The longitudinal strip, however, just back of this covering-plate has thereon the word "Change." When, therefore, it is desired to open the drawer or till in order to make change when an actual sale has not been effected, the change-key is manipulated, and instead of a certain amount being recorded the covering-plate which is operated merely discloses the word above mentioned.

The drawer or till of the machine is indicated by the numeral 75. This drawer is normally held closed by means of two latches 76 76, engaging over the upper edge of the inner side piece of the drawer. These latches are mounted upon a longitudinal shaft 77, and their inner ends are connected by means of a connecting-rod 78. The dogs have also pivoted thereto and extending upwardly therefrom rods 79 79, which rods are connected at their upper ends by means of a rod 80, said rod passing over the tops of the boxes of the bars of the upper keys. It will be noticed that the bars of the lower keys are provided with downwardly-extending beveled lugs 81, which lugs project through elongated slots 82, formed in the under sides of the boxes 15. It will also be noticed that the inner ends of the upper key-levers are provided with beveled surfaces 83. Now when, for instance, a sale is made of a less denomination than one dollar the appropriate lower key is pressed inwardly, and after it has traveled a certain distance the downwardly-extending beveled lug 81 of its rack-bar will act upon the connecting-rod 78 and cause the latches to be lifted out of engagement with the drawer or till. There are coiled springs 84 84 on opposite sides of the drawer, the outer ends of said springs being connected to the outer casing of the machine and the inner ends to lateral projections from the drawer. The moment, therefore, the latches are released in the manner just described the recoil of the springs will cause the drawer to

automatically open. About the same operation takes place when any of the dollar-keys are pressed in. In such case the beveled surface 83 of the dollar-key which has been manipulated will act on the rod 80 and cause the lifting of the rods 79 79 and the consequent lifting of the latches.

I also prefer to provide my improved device with a means for opening the drawer and at the same time locking the machine against registration. This consists in providing a medially-pivoted latch 85, which at opposite ends is provided with rectangular recesses facing in opposite directions and adapted, respectively, to engage square portions 86 and 87, respectively, of the shafts 21 and 30. This latch is conveniently turned by means of a key adapted to be passed through a keyhole 88 and when turned remains automatically in engagement with the two shafts by reason of the fact that the pivot is central, and the arm is therefore balanced and equally weighted on opposite sides of the pivotal points. The latch will remain in this engaging position until the key is turned in an opposite direction to release said latch.

The drawer or till is provided with a rearwardly-extending arm 89, which is adapted to normally engage with a pivoted hammer 90. One end of a coiled spring 91 is connected to this hammer and the other end to a fixed part. The numeral 92 indicates a gong. It is obvious that when the drawer is pulled out the arm 89 acts on the hammer so as to turn the same on its pivot, and when said arm finally becomes disengaged from the end of the hammer the coiled spring will pull said hammer into forcible engagement with the gong, and thus the alarm will be sounded each time the drawer is opened.

On Sheet 6 of the drawings I illustrate a slightly-modified form of construction for determining the aggregate amounts of sales, the modification being specially intended for securing economy of space in the arrangement of the different indices. In this form of construction I omit altogether the large index-wheel 37, as also the index-wheel 42. On the shaft 30, on the outer side of the toothed wheel 35, I mount fast an index-wheel 93. This wheel has on its outer face a series of indices running from "0" to "9." Projecting out from the shaft 30 is a finger 94. The numeral 95 indicates a short shaft or arbor, upon which is mounted a small toothed wheel 96 and also an index-wheel 97. This latter wheel has on its outer face a series of numbers running from "0" to "9." Projecting out from the shaft 95 is a finger 98. The numeral 99 indicates another short shaft or arbor, upon which is mounted a toothed wheel 100 and an index-wheel 101. The latter wheel has on its outer face a series of numbers running from "0" to "9." Now in front of these several index-wheels is a plate 102, having sight-openings 103 for each wheel. This plate is also adapted to be of such length

as to extend over to the wheel 25 and is provided with an additional sight-opening 104 for the numbers on this wheel 25. The side of the outer casing is provided with a suitable opening controlled by a door 105, which when opened will clearly disclose the plate 102. In the operation of this modified form when the shaft 30 is turned either by the finger 36 or by manipulating one of the dollar-keys the index-wheel 93 will be turned one tooth and the aggregate of dollar-sales up to that time will be visible through the proper sight-opening 103 of the plate 102. When the wheel 93 has made a complete revolution or has brought "0" to view through the sight-opening, then the projecting finger 94 will cause the index-wheel 97 to be rotated one tooth, thus bringing the number "1" on that wheel to view through the sight-opening for wheel 97 and indicating that ten dollars of sales have been made. When wheel 97 has made one complete revolution, then its finger 98 will cause the index-wheel 101 to rotate one tooth and the aggregate registration of wheel 97 to be transferred on every complete revolution of said wheel to the wheel 101. Spring pawls or dogs 106, 107, and 108 engage, respectively, the toothed wheels 35, 96, and 100 in order to hold said wheels to adjusted position. It will of course be understood that as many of these toothed wheels might be employed as desired merely by duplicating the parts. The advantage of this arrangement is that it brings the sight-openings for the different aggregate amounts in a compact space and conveniently together, so that it is possible to determine at a glance the aggregates of all the several indices.

What I claim as my invention is—

1. In a cash-register, the combination, of a casing, key-levers extending from the exterior into the casing and formed or provided upon their inner ends with downwardly-inclined rack-bars, inclined boxes for the rack-bars, said boxes provided with elongated slots for the projection therethrough of the teeth of the rack-bars, a shaft mounted in the casing and provided along its length with longitudinal teeth adapted to be engaged by the teeth of the rack-bars as said bars are operated by the key-levers, and to be given a varying rotation by the different rack-bars, an index, and mechanism between the index and the shaft for turning said index synchronously with the shaft, and for holding the index in adjusted position.

2. In a cash-register, the combination, of a casing, a sliding drawer or till, a spring or springs connected to the drawer and to a fixed part, pivoted latches engaging said drawer, the ends of the latches being united by a con-

necting-rod, rods extending from the latches, and also united by a connecting-rod, key-levers adapted, when operated, to contact with the connecting-rod of the latches and thereby turn the latches on their pivots to release said latches from engagement with the drawer, and other key-levers adapted, when operated, to engage the rod which connects the rods extending from the latches, whereby said latches are likewise turned on their pivots out of engagement with the drawer.

3. In a cash-register, the combination with actuating parallel shafts, square in cross-section, and arranged at a distance apart, of a latch disposed between the shafts and turning on a central pivot, and provided centrally with a keyhole, and at its ends with oppositely-facing square recesses, said keyhole adapted to be engaged by the key, whereby, when the key is turned in one direction, the latch is turned in a direction to throw the recesses into engagement with the shafts, said engagement being automatically maintained until the latch is turned in the opposite direction by the key in order to disengage the recesses from the shafts.

4. In a cash-register, the combination, of fluted or longitudinally-toothed shafts, a series of key-levers for each shaft, said key-levers having different denominations indicated thereon, and also having teeth projecting therefrom, the number of teeth being different on each lever, and the several levers of a series adapted, when operated, to engage their shaft and to impart varying rotations thereto, registering mechanisms for each series of key-levers, each registering mechanism adapted to be operated by the keys common thereto, whereby either series of keys can be operated to independently register the denominations of said keys on the registering mechanism common thereto, and transferring mechanism between the sets of registering mechanisms, said transferring mechanism adapted, when one registering mechanism has made a complete revolution, to act on the succeeding registering mechanism so as to turn the same a small fractional part of a complete revolution, and thereby transfer the total registration of the first registering mechanism to the succeeding registering mechanism, independent of any actuation of the keys appertaining to said succeeding registering mechanism.

In testimony whereof I affix my signature in presence of two witnesses.

JAMES MALLMANN.

Witnesses:

ARTHUR L. MORSELL,
ANNA V. FAUST.