

T. CARROLL.
CASH REGISTER.

No. 521,332.

Patented June 12, 1894.

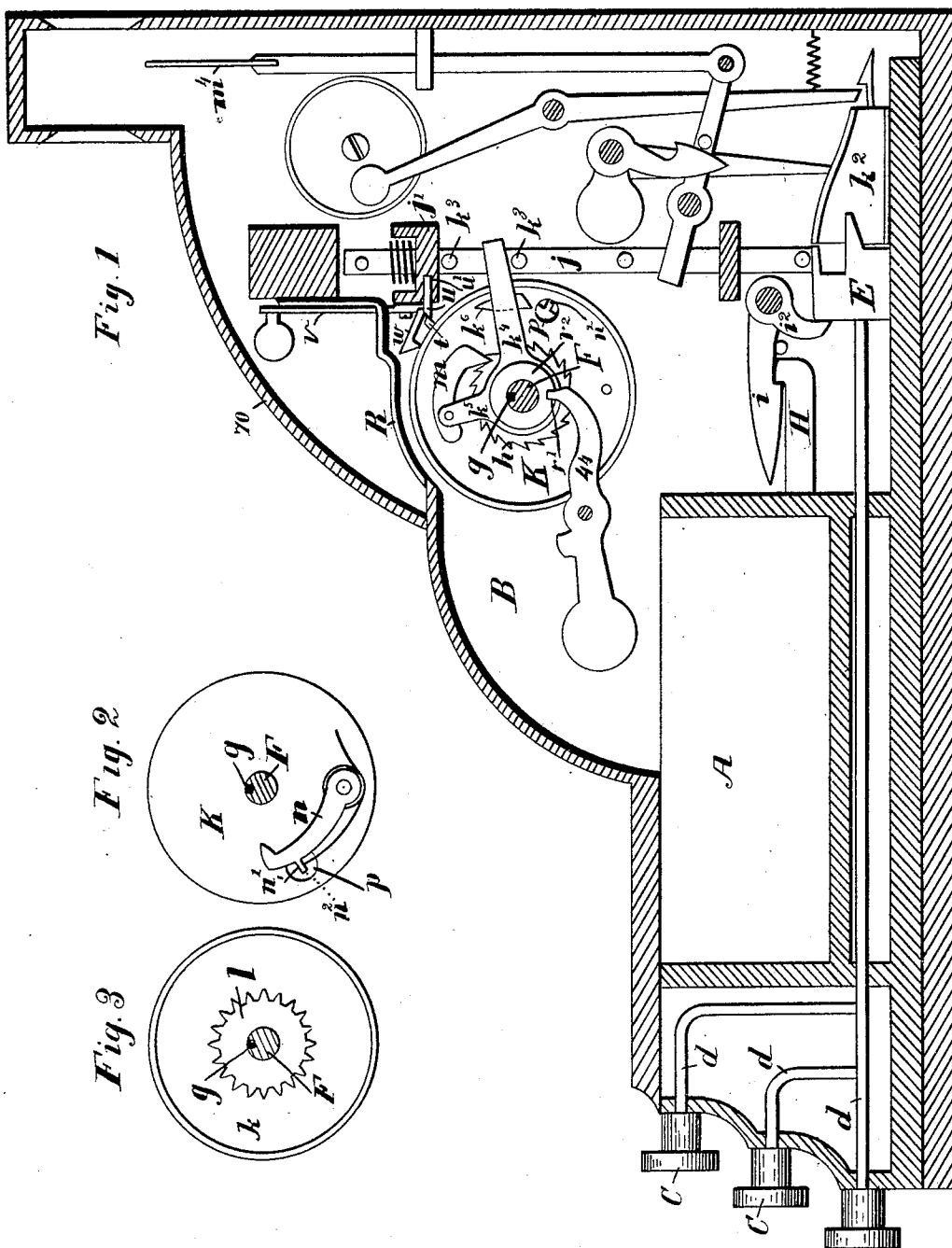


Fig. 1

Fig. 2

Fig. 3

WITNESSES:

Linus Barnes
George Webber

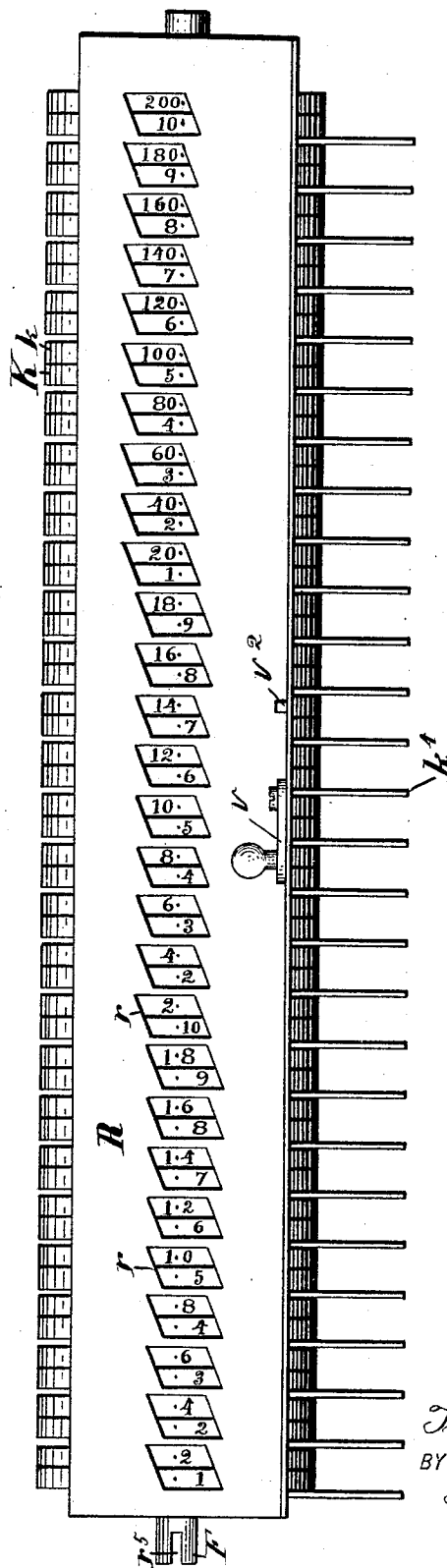
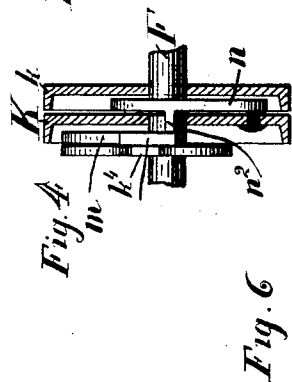
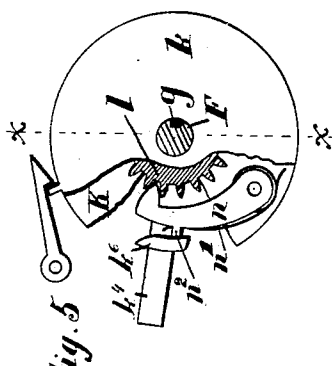
INVENTOR

Thomas Carroll
BY *George L. Barnes*
ATTORNEY.

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Fig. 1

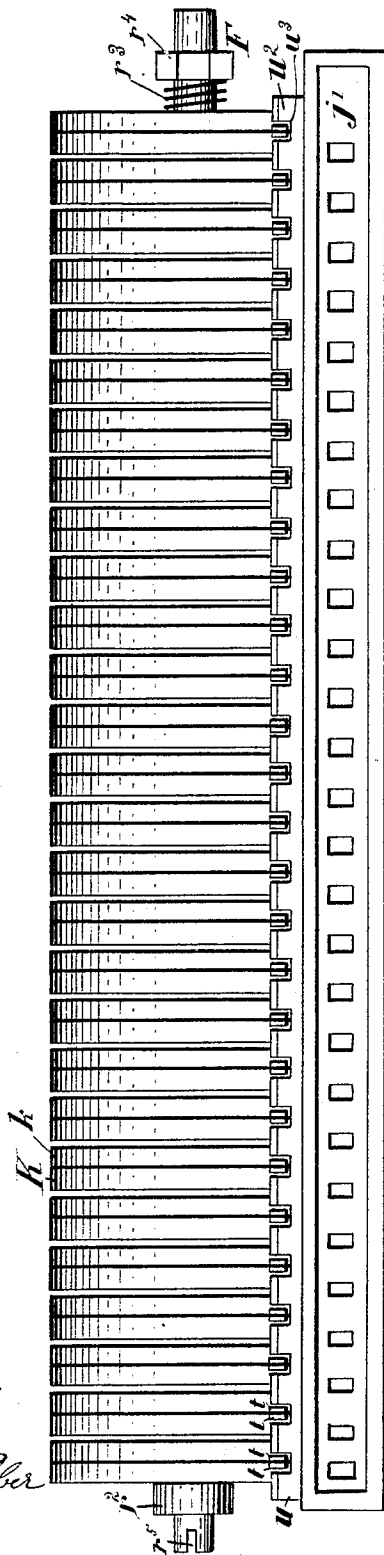


Fig. 9

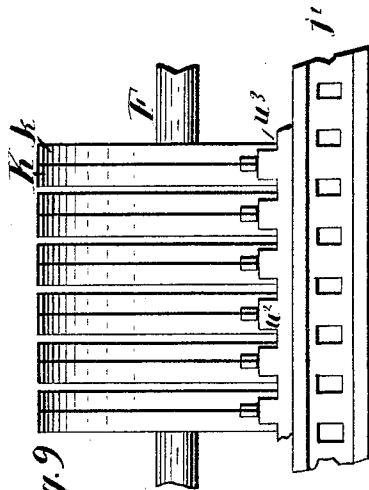
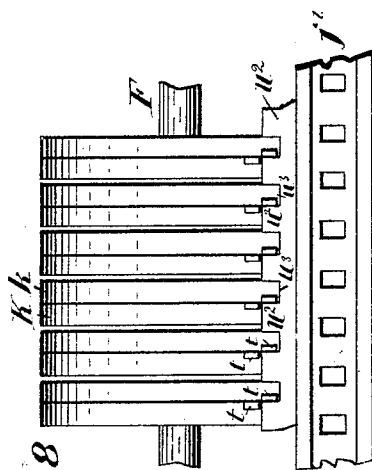


Fig. 8



WITNESSES:

James Barnes,
George Webber

INVENTOR

Thomas Carroll

BY *George S. Barnes*

ATTORNEY.

T. CARROLL.
CASH REGISTER.

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Fig. 10

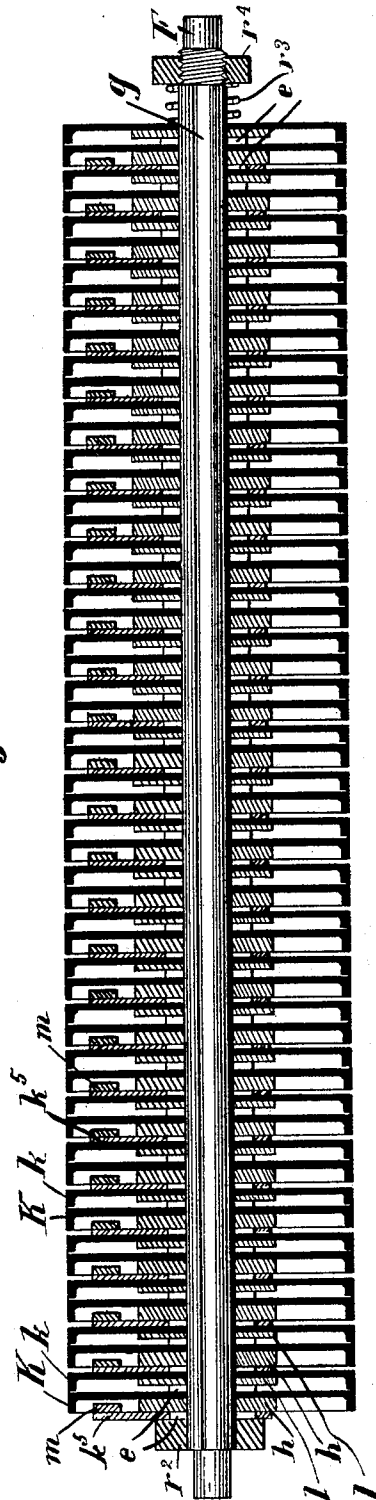


Fig. 16

19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
0	95	90	85	80	75	70	65	60	55	50	45	40	35	30	25	20	15	10	05

WITNESSES:

Linus Barnes
George Webber

INVENTOR

Thomas Carroll

BY

George L. Barnes

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Fig. 12

Fig. 11

WITNESSES:

Linus Barnes
George Welber

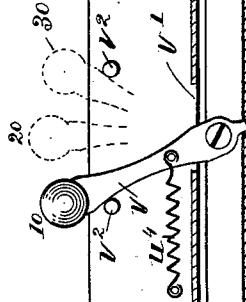
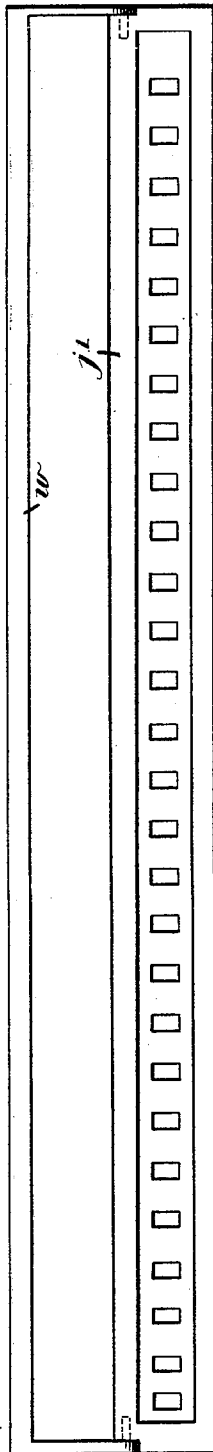


Fig. 13

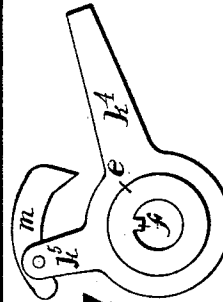
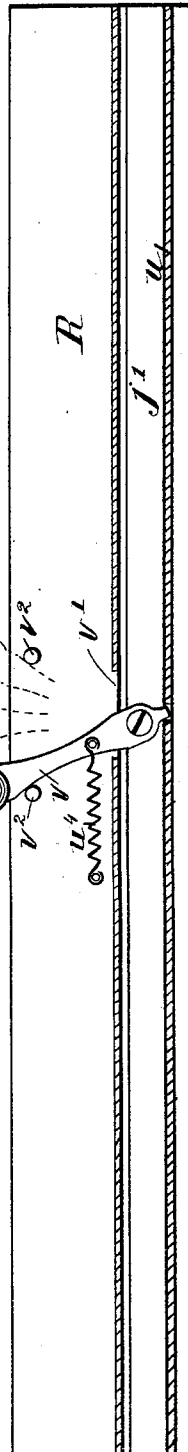


Fig. 17

INVENTOR

Thomas Carroll

BY

George L. Barnes

ATTORNEY.

T. CARROLL.
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No. 521,332.

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19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
0	.95	.90	.85	.80	.75	.70	.65	.60	.55	.50	.45	.40	.35	.30	.25	.20	.15	.10	.05

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0	.80	0		
0	.76	.72	.68	.64	.60	.56	.52	.48	.44	.40	.36	.32	.28	.24	.20	.16	.12	.08	.04

11.4	10.8	10.2	9.6	9.	8.4	7.8	7.2	6.6	6.	5.4	4.8	4.2	3.6	3.	2.4	1.8	1.2	.600	
0	.57	.54	.51	.48	.45	.42	.39	.36	.33	.30	.27	.24	.21	.18	.15	.12	.9	.6	.3

7	6	5	4	3	2	1	0	.40	0										
0	.38	.36	.34	.32	.30	.28	.26	.24	.22	.20	.18	.16	.14	.12	.10	.08	.06	.04	.02

3	2	1	0	.20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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Fig. 14

Fig. 15

4	3	2	1	0	.19	.18	.17	.16
0	.20	.15	.10	.05	.00	.95	.90	.85
3	2	1	0	.15	.14	.13	.12	.11
0	.16	.12	.08	.04	.00	.76	.72	.68
2	1	0	.11	.10	.09	.08	.07	.06
0	.12	.09	.06	.03	.00	.57	.54	.51
6	5	4	3	2	1	0	.76	.72
0	.80	.60	.40	.20	.00	.38	.36	.34
8	7	6	5	4	3	2	1	0
0	.40	.30	.20	.10	.00	.19	.18	.17

WITNESSES:

Linus Barnes
George Webber

INVENTOR

Thomas Carroll
BY George L. Barnes
ATTORNEY.

UNITED STATES PATENT OFFICE.

THOMAS CARROLL, OF NEW HAVEN, CONNECTICUT, ASSIGNOR TO THE
HUBINGER CARROLL CASH REGISTER COMPANY, OF SAME PLACE.

CASH-REGISTER.

SPECIFICATION forming part of Letters Patent No. 521,332, dated June 12, 1894.

Application filed April 29, 1893. Serial No. 472,322. (No model.)

To all whom it may concern:

Be it known that I, THOMAS CARROLL, a citizen of the United States, residing at New Haven, in the county of New Haven and State of Connecticut, have invented certain new and useful Improvements in Cash-Registers, of which the following is a specification.

My invention relates to improvements in registry mechanism for that class of cash registers in which the registering mechanism is multiplied to correspond to a series of keys or operating devices representing a varying series of values, such as the cash register which forms the subject of Patent No. 499,192, issued to me June 6, 1893. In the said invention, a series of knobs or drawer pulls and disengaging mechanisms are arranged upon and individually adapted to release the cash drawer, the opening movement of which by means of suitable multiple motive mechanism carried thereon and corresponding to the drawer pulls, operates suitable registering mechanism also duplicated for each drawer pull and numbered in conformity with their representative values, as fully shown and described in the said application. Said registering mechanism comprised registry tapes numbered to conform to their respective drawer pulls, and mounted on suitable carrying rolls and reels, involved the disadvantage of being positively stopped whenever any of the tapes became entirely unwound from its reel, it being desirable that the rotative capacity of the mechanism shall be unlimited. The multiplication of the registering devices in this class of machines renders the reduction of the wheels of the registry mechanism extremely desirable. In a series of wheels, each having ten divisions, and respectively bearing units, tens, hundreds and so on upward, each wheel being ratcheted forward one division for each revolution of the wheel of the next lower denomination, three wheels are capable of registering up to 999, while two wheels will register only 99, which limit is too low for practical purposes, as the wheels would too frequently require to be reset at zero. A greater registering limit may be attained with two wheels if the divisions be increased to some higher term than ten, the primary wheel being numbered in arithmetical progression commencing at zero and advancing by the number of the corresponding

key or drawer pull for the common difference, and the secondary wheel being numbered in arithmetical progression starting from zero, and having the number of the divisions of the wheel multiplied by the number of the drawer pull for the common difference, as hereinafter described. The registering limit of a pair of such wheels corresponds to the square of the number of the divisions of a single wheel, as if the division were twelve, the limit would be one hundred and forty-four. But in case any other number than ten be employed as the basis of the divisions of the wheels, the decimal system will not obtain, and the process of addition is required in reading the registration, as shown in the following instance, supposing the wheels to have twenty divisions each, the primary wheel being numbered from 0 to 19 inclusive, and the secondary wheel being numbered from 0 to 380, advancing by twenty, it being understood that the second wheel is to be moved forward one division for each complete revolution of the primary. Then, assuming the primary wheel to have been turned around fourteen times and fourteen divisions, the numbers 14 and 280 will have been brought into position to be read, and the correct reading will be the sum of those numbers, or 294, which amount may be obtained by calculation.

The object of my present invention is to provide means for facilitating the calculation of readings as aforesaid, and to reduce the widths of the wheels to a minimum. A further object is to provide improved ratchet mechanism for operating the wheels, and resetting mechanism for setting the wheels at zero.

The invention resides in the novel construction and combination of the registering wheels and their operating and resetting mechanism, and in the novel system of arranging the numbers of the registering wheels for facilitating the computation of the readings, as hereinafter more fully described and claimed.

In the accompanying drawings forming part of this specification, Figure 1 is a side elevation of a cash register and indicator of the class forming the subject of the aforesaid patent, and embodying my present improvements of the registry mechanism. Fig. 2 is a view of one of the primary registering wheels showing the side opposite that shown in Fig. 1.

Fig. 3 is a view of the secondary registering wheel, showing the side adjacent to the companion primary wheel. Fig. 4 is a section through a pair of registering wheels, on the line xx Fig. 5. Fig. 5 is a side elevation of the registering wheels, the wheels being broken away to show the parts. Fig. 6 is a plan view of the reading bar and registering wheels, which for simplicity are there shown numbered only upon the divisions which show through the sight apertures of the reading bar. Fig. 7 is a plan view of the registering wheels and the resetting stop, the wheels being unnumbered. Fig. 8 shows the same with the resetting stop in position to arrest the movement of the primary registering wheels. Fig. 9 shows the same with the resetting stop in position to arrest the movement of both wheels. Fig. 10 is a central vertical section through the registering wheels. Fig. 11 is a plan view of the detent pawl, and Fig. 12 is an end view of the same. Fig. 13 is a front elevation of the resetting mechanism. Fig. 14 is a diagram of the peripheries of the first five pairs of registering wheels, represented upon a plane, the dividing line of the numbers being made upon the zero mark. Fig. 15 is an elevation of the first five pairs of registering wheels, shown numbered. Fig. 16 shows a modification. Fig. 17 is a view of a friction washer with the lever k^4 journaled thereon.

Referring to the drawings, B in Fig. 1 shows a cash register such as forms the subject of my Patent No. 499,192 aforesaid, embodying my present improvements. The cash drawer A carries a series of knobs C having their operating rods d guided in the drawer, each knob being adapted by means of an engaging head E and operating dog v^2 suspended in the case, to disengage the latch i from the locking hook H on the drawer, which in its subsequent opening movement, by means of suitable cams k^2 , depresses suitable trips j pertaining to the knobs previously operated and released by the engaging heads thereof, thereby elevating the corresponding indicator tablets m^4 by means of appropriate mechanism, all as fully described and shown in the aforesaid patent, and here requiring no further description. In a cash register of this kind, it will be seen that each knob of the cash drawer must possess its own registry mechanism, numbered to conform to the numerical rank and denomination of the knob. For instance, a cash register adapted to register any amount from one cent up to ten dollars would require nine units knobs numbered from 1 to 9 inclusive, nine tens knobs numbered from 10 to 90 inclusive, nine hundreds knobs numbered from one dollar to nine dollars, and one knob representing ten dollars, and so on to any desired amount above that sum. Thus twenty eight independent sets of registry mechanism would be required, comprising a total of fifty six wheels.

K. designates the primary wheels, and k the secondary wheels of each set throughout the series, all mounted on the stationary horizontal shaft F, and each adapted to turn thereon independently of the others, all being separated by suitable friction washers e , which are provided with tongues f , fitting a lengthwise spline g , in the shaft, whereby the washers are prevented from turning thereon. All of the wheels are provided with ratchets, attached rigidly to them, h designating the ratchets of the primary wheels shown in Fig. 1, and l designating the ratchets of the secondary wheels, the teeth of which more nearly correspond to gear teeth, as shown in Fig. 3.

Upon each alternate friction washer e ,—that is, the washers which separate the independent sets or pairs of registering wheels,—a rock arm or oscillating lever k^4 is journaled, each having the arm k^3 , to which is pivoted a pawl m , adapted to engage the teeth of the ratchet of the adjacent primary wheel K. The said pawl levers are adapted to be reciprocated through a fixed distance in the opening and closing movement of the drawer, by means of pins or tappets k^3 carried on the aforesaid trips j , thereby ratcheting the primary wheel forward one tooth each time that the drawer is opened.

The ratchets h and l have each twenty teeth, and each primary wheel carries a pawl n pivoted thereto, on the side opposite the ratchet h , and adapted to engage the teeth of the ratchet l of the corresponding secondary wheel k . The pawls are normally held out of engagement with said ratchets, by springs n' acting between the wheel and an arm n^2 on the pawl. The said arm passes through a hole p in the primary wheel, whereby its outward motion is limited, and projects into the path of a cam k^6 carried on the pawl lever k^4 and adapted, by riding up on the outer side of the arm, to press the pawl n into engagement with the teeth of the ratchet l , as shown in Figs. 4 and 5, thereby locking the primary and secondary wheels together, and causing them to rotate together. This occurs once in each revolution of each primary wheel, and each cam k^6 is so proportioned that it will slip off the corresponding arm n^2 at the next succeeding motion of the pawl lever k^4 , and thus free the secondary wheel. Thus for each revolution of the primary wheel, the corresponding secondary wheel will be rotated one twentieth part of an entire revolution. The wheels are each graduated into twenty divisions, each primary wheel being numbered in arithmetical progression starting from zero and having for a common difference the number of the wheel, as 1 for the cent wheel, 2 for the two cent wheel, and so on. The secondary wheels are also numbered in arithmetical progression from zero, and having for a common difference that multiple of twenty corresponding to the number of the accompanying primary wheel, as 20, 40, 60, 80, &c., for

the first secondary wheel, 40, 80, 120, &c., for the second secondary wheel and for the third secondary wheel, 60, 120, 180, and so on by advances of three times twenty, up to eleven hundred and forty. It is not necessary to print the full numbers on the wheels, for abbreviations may be employed, as for instance eleven hundred and forty may be printed 11-4, and so on throughout the series.

All the numbers are arranged vertical to the rotating planes of the wheels, that is, their positions in the line which they form around the periphery of each wheel is similar to the positions which they would assume as ordinarily placed in the lines of a printed page, as fully shown in Figs. 14 and 15, and the corresponding numbers of the primary and secondary wheels are arranged with their decimal points in line with each other, according to the rules governing the addition of decimals. Thus arranged, the numbers of each pair of wheels may be conveniently added as they appear through the slots or sight apertures r of the reading bar R , which is fastened in the case of the cash register, directly over and adjacent to the series of wheels, shown in Figs. 1 and 6. It is also advantageous to place the decimal points of the entire series of wheels in alignment, as shown in Figs. 6 and 15 whereby the collective readings of the wheels are brought into the same relation as numbers arranged in a column for the purposes of addition and in accordance with the arithmetical rule for addition of decimals, requiring all the decimal points to be placed in the same column. Thus if desired, the collective readings may be readily totalized without being transferred to paper or a slate.

In the operation of the registering wheels it will be understood that they must first be set at zero, as shown in Fig. 15, after which they will record sales up to their full registering capacity, which is twenty times twenty, or four hundred movements of any particular set of wheels. But when any set of wheels has reached such registering limit, it will continue to record, starting again from zero, without obstructing the movement of the mechanism, the previous record of such set of wheels simply being lost if the series are not reset to zero when any pair of wheels has made four hundred movements. In Fig. 6, each wheel is shown in the position corresponding to one division ahead of zero, that is each primary wheel is supposed to have been turned one complete revolution and one division, and the secondary wheel has moved a single division, as hereinbefore described.

Resetting the series of registering wheels at zero is accomplished as follows: All the wheels are independently journaled upon their shaft, which is normally held stationary by means of a detent pawl 44 engaging a slot r' in a collar r^2 secured on the shaft. The friction washers e are held from rotating by engagement of their tongues f with the spline in the shaft, but are free to slip lengthwise along

the shaft, whereby the entire series of wheels and washers are held in frictional contact by a suitable spring r^3 coiled around the shaft at one end of the series, having its pressure regulated by adjustment of a nut r^4 screwed upon the shaft, as shown in Figs. 7 and 10, the wheels and washers being held in the opposite direction by the said collar. Thus if the shaft be turned in its bearings it will carry the entire series of wheels with it. For this purpose one end of the shaft has a slot r^5 whereby a screw driver or suitable key may be applied to turn it.

Each wheel is provided with a stop projection or shoulder t on its periphery, and a resetting stop or bar u is fitted in a slot u' in the guide j' wherein the trips j are arranged, said resetting stop having its edge notched to provide a series of tongues u^2 and spaces u^3 corresponding to the series of registering wheels. The stop is placed sufficiently near the wheels to intercept the projection t and arrest the rotation of the wheels, when the tongues u^2 are in the plane of the projections, as shown in Fig. 9. But normally the stop is held with the spaces u^3 coincident with the paths of the projections, which allows free rotation of the wheels. The stop is normally held in such position by means of a spring u^4 attached to the reading bar and to a lever v pivoted to the guide j' and passing up through a slot v' in the reading bar, and having its lower end engaged with the stop, as shown in Fig. 13. Shoulders v^2 on the reading bar limit the movement of said lever, being placed in such relation thereto that they determine the position of the lever for stopping the wheels, as indicated by the numerals 30 in Fig. 13, or the position allowing free rotation thereof, as indicated by the numerals 10 in said figure. If the lever is moved away from the position 10, as when placed in the position 20, the stop will intercept the primary wheels only, as shown in Fig. 8, it being necessary to reset the primary and secondary wheels separately owing to their different rates of movement. In resetting the mechanism to zero, therefore, the resetting stop should be first set in the position shown in Fig. 8, that is with the lever v in the position indicated by the numerals 20, which as the shaft is turned ahead, will bring one half of the registering wheels to zero, then by throwing the lever over to the position indicated by the numerals 30, and again turning the shaft, the remaining half of the wheels will be brought to zero, as shown in Fig. 9 it being understood that the projections t are set in such position on the wheels, that when engaged by the resetting stop, the zero figures of the wheels will be brought into position to show through the sight apertures of the reading bar. A single turn of the shaft will bring all the primary wheels to zero, and another turn will place the secondary wheels in the same position. To gain access to the interior of the case, to set the mechanism or to observe

the readings, the cover 70, may be removable in any desired suitable manner. As the wheels are normally held from turning on their shaft by the friction mechanism designated, it is not necessary to provide detent pawls to prevent their backward motion, except when the cam k^6 rides upon the arm n^2 , or in the position shown in Figs. 4 and 5, which resistance tends to carry the primary wheels backward. This occurs when any particular primary wheel has made nineteen movements, and is within one move of zero. I therefore place a detent v of the form shown, over the entire series of wheels, pivoted to the guide j' as shown in Figs. 1, 11 and 12, and in position to drop back of the projections t just as they complete their nineteenth movement, the pawl being beveled as shown to enable said projections to pass under and raise it while going ahead, but its rear side forms a shoulder which holds the projections against backward movement. The detent pawl will thus hold the primary wheels stationary at the time when the engagement of the cam k^6 and the arm n^2 takes place in the interlocking of the pair of wheels, as described.

It will be understood that the numbers upon the registering wheels, instead of being placed exactly vertical to the rotating planes thereof, may be placed somewhat inclined thereto without departing from my improved system of arranging the numbers of the primary and secondary wheels, relatively to the position of the decimal points. Such modification is shown in Fig. 16, comprising the first two sets of wheels, the numbers being set at an angle to a line longitudinal to the periphery of the wheels but the decimal points of corresponding spaces or numbers of the primary and secondary wheels are placed in alignment, and the decimal points of the entire series of wheels may also be arranged in alignment, in accordance with the principles hereinbefore set forth.

I claim—

1. In registry mechanism the combination of the primary and secondary wheels, arranged to rotate upon a common axis, a pawl and ratchet for imparting ratchet motion to the primary wheel by movement of an external operating part, pawl and ratchet mechanism substantially as described, adapted to periodically actuate the secondary wheel by rotation of the primary wheel, said primary wheel bearing a series of numbers in arithmetical progression proceeding from zero, and the secondary wheel bearing a similar series of numbers in arithmetical progression proceeding from zero and having a common difference equal to the divisions of the wheel multiplied by the common difference of the series of the primary wheel, said numbers being arranged substantially perpendicular to the rotating plane of the wheels, and with the decimal points of corresponding numbers of the respective wheels in alignment, whereby

in the collective readings of a pair of wheels, units are brought under units, tens under tens, and hundreds under hundreds, in conformity with the rule governing the addition of decimals, substantially as and for the purpose specified.

2. In cash registry mechanism the combination of a shaft, a series of registering wheels loosely mounted thereon in pairs or sets each comprising a primary and secondary wheel, ratchets carried by the wheels, friction washers mounted upon the shaft intermediate of the wheels and secured to turn with the shaft but adapted to lengthwise movement thereon, a spring and adjusting nut for regulating the friction of said wheels and washers, pawls and operating levers for actuating the primary wheels, rotating pawls carried by the primary wheels and adapted to operate the ratchets of the secondary wheels, springs for holding said rotating pawls normally out of engagement with said ratchets, cams carried by the operating levers and adapted to engage the rotating pawls with the ratchets of the secondary wheels, a detent pawl extended over the entire series of registering wheels, and projections or shoulders carried by the primary wheels and arranged and adapted to engage the detent pawl to hold the wheel against backward movement from the thrust of the cams of the operating levers against the rotating pawls, substantially as and for the purpose specified.

3. In cash registry mechanism the combination of a shaft, a series of registering wheels loosely mounted thereon in pairs or sets each comprising a primary and secondary wheel, friction washers interposed between the wheels and secured to turn with the shaft but adapted to longitudinal movement thereon, ratchets carried by the wheels, independent pawls for operating the primary wheels, rotating pawls carried by the primary wheels and adapted to actuate the ratchets of the secondary wheels, cam mechanism substantially as described for engaging said rotating pawls and their ratchets, means for regulating the friction of the friction washers against the registering wheels, a detent pawl common to the entire series of wheels, stop projections on the wheels for engaging the said detent pawl simultaneously with the engagement of the rotating pawls and their ratchets, a resetting stop or bar guided in bearings in the case, in juxtaposition to the series of wheels, and provided with tongues and notches corresponding to the stop projections of the wheels, and respectively adapted to engage and intercept the stop shoulders of one or both series of the registering wheels, or to permit their free rotation, corresponding to the position of the stop in its bearings, substantially as and for the purpose specified.

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Witnesses:

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