

Oct. 3, 1933.

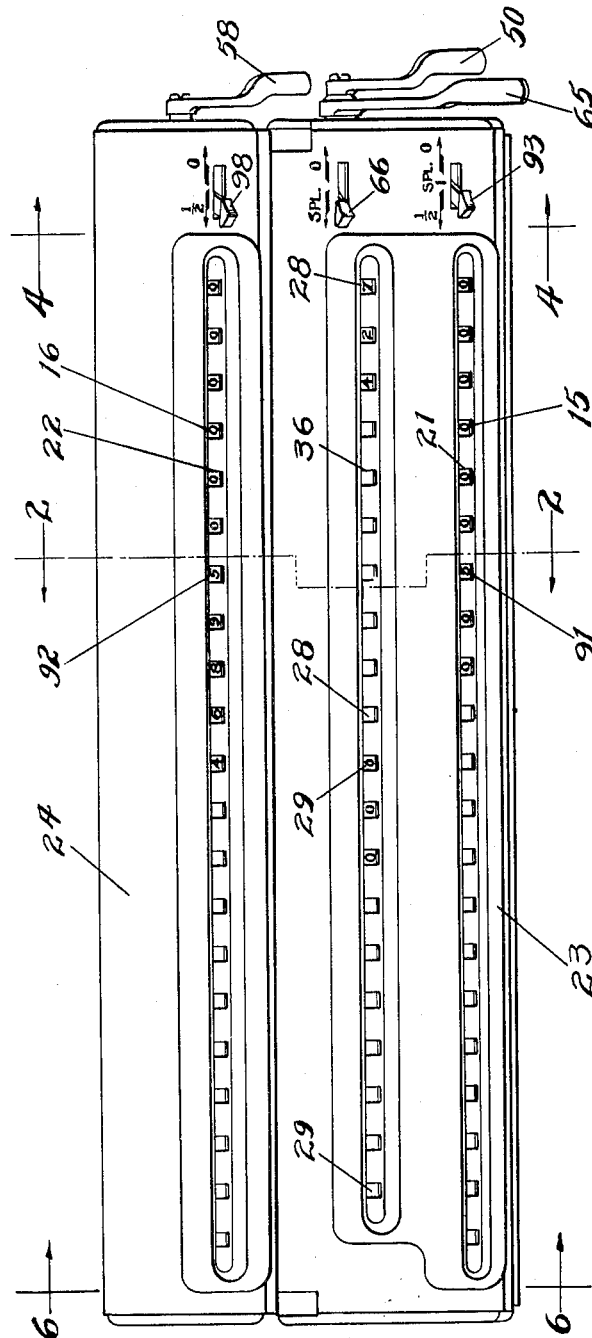
L. R. BROWN

1,929,053

REGISTER

Filed June 13, 1931

4 Sheets-Sheet 1



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4 Sheets-Sheet 2

Fig. 2.

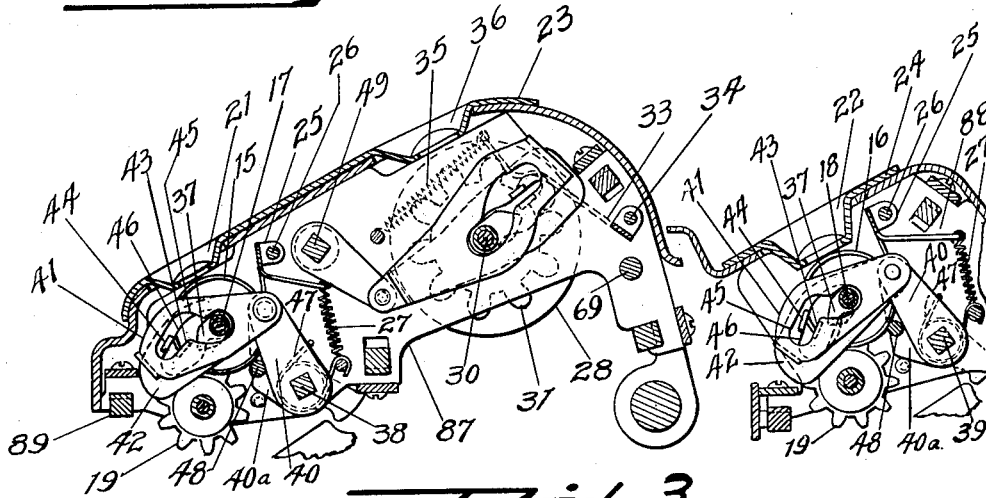


Fig. 3.

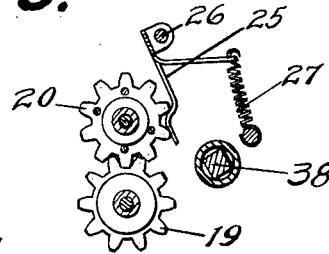
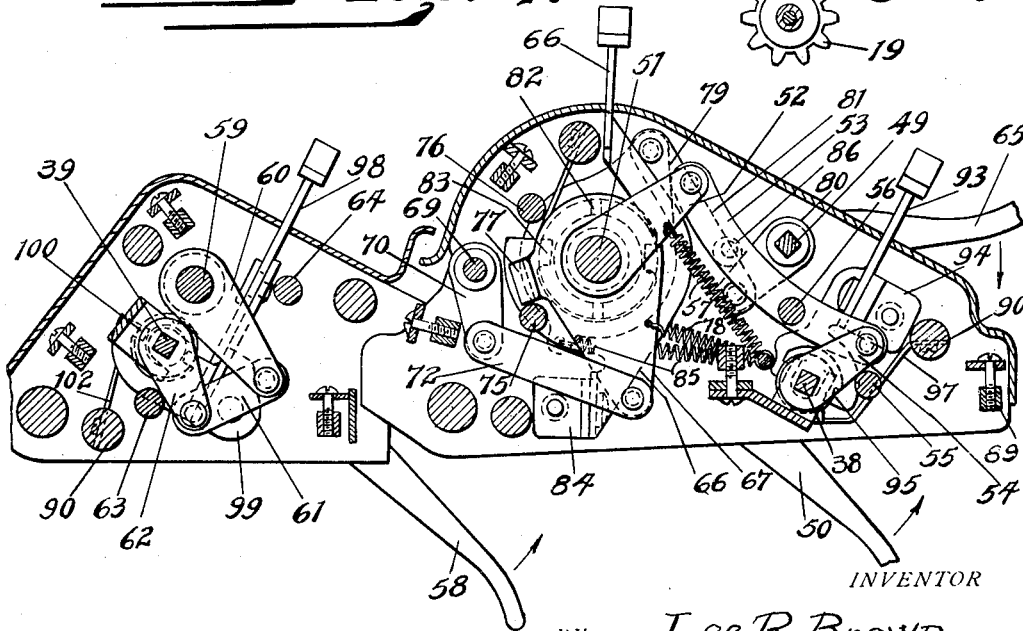


Fig. 4.



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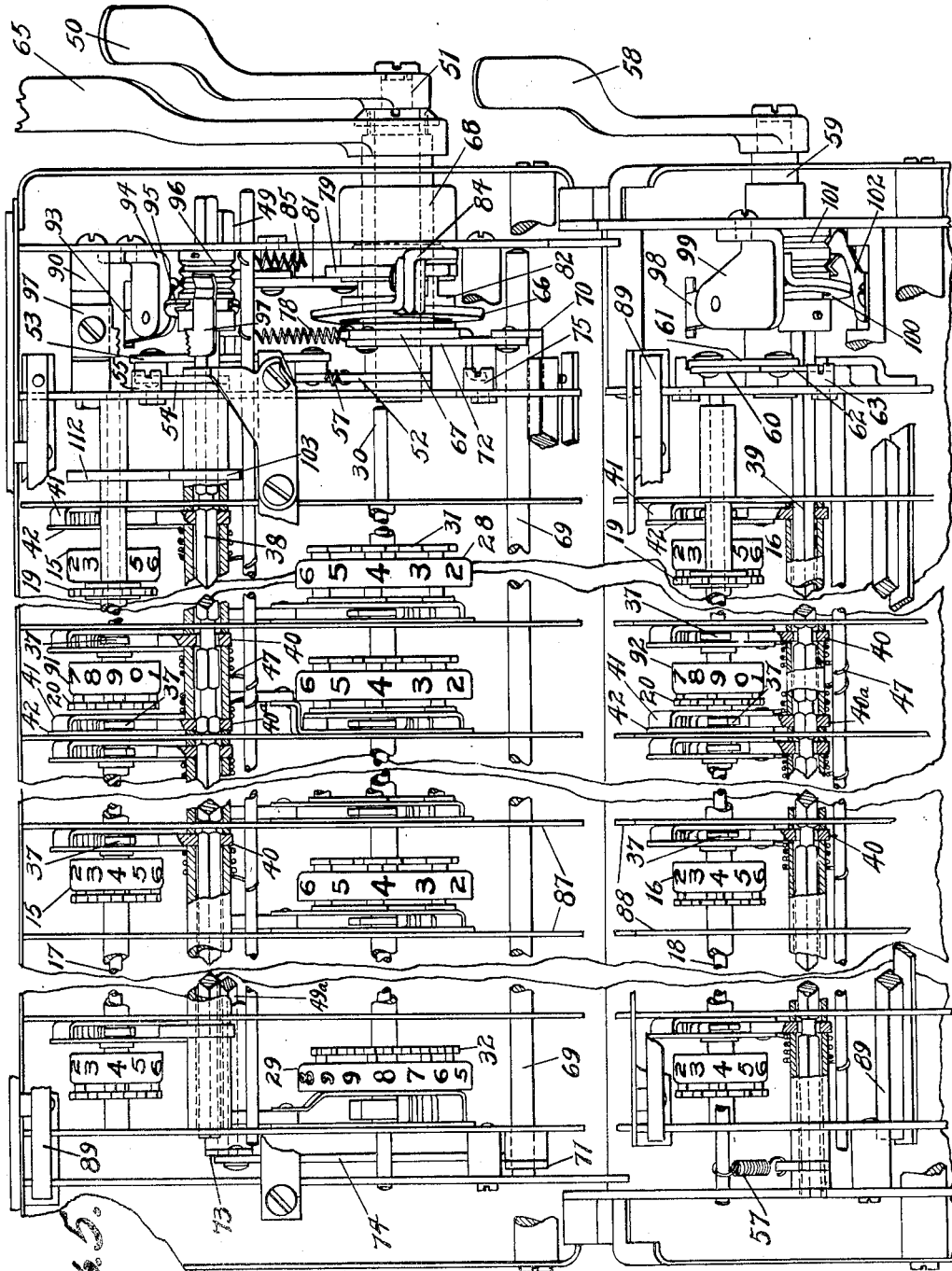
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4 Sheets-Sheet 3



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Fig. 8.

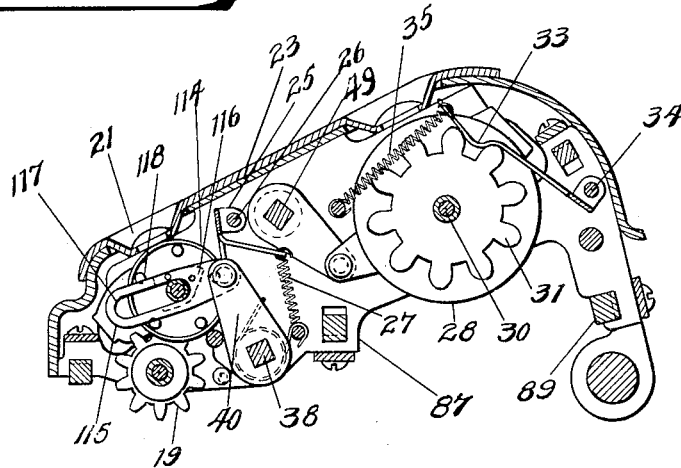


Fig. 7.

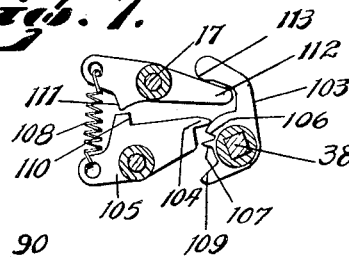
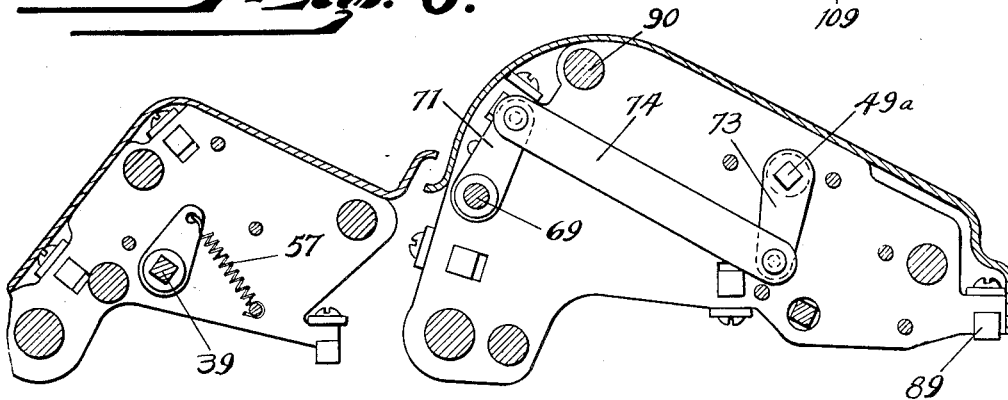


Fig. 6.



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UNITED STATES PATENT OFFICE

1,929,053

REGISTER

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Application June 13, 1931. Serial No. 544,065

4 Claims. (Cl. 235-144)

The invention has relation to clearing or resetting means for the numeral wheels of registers, and more particularly to means whereby the wheels may be reset selectively.

Resetting means used in connection with computations to the nearest half cent are shown in the application of Edwin F. Britten, Jr., Serial No. 379,948, filed July 22, 1929, (now Patent No. 1,860,490) and entitled Attachment for calculating machines, and the present invention is a development of the mechanism disclosed in said application. In the present instance, however, a half cent mechanism, or the like, is applied to a calculating machine constructed in accordance with the disclosure of the Patent #1,781,320, granted to Loring P. Crosman on November 11, 1930, and entitled Zero-setting device.

The invention consists in the novel construction and combination of parts, as set forth in the appended claims.

In the accompanying drawings illustrating the invention:

Fig. 1 is a plan view of the register carriage of a calculating machine embodying the invention.

Fig. 2 is a section taken on line 2-2 of Fig. 1. Fig. 3 is a detail sectional view of the spring detent mechanism.

Fig. 4 is a section taken on line 4-4 of Fig. 1. Fig. 5 is a fragmentary bottom plan view of the carriage.

Fig. 6 is a section taken on line 6-6 of Fig. 1.

Fig. 7 is a detail section of the full-stroke mechanism.

Fig. 8 is a sectional view similar to Fig. 2, showing an alternative mechanism for computing to the nearest even cent.

Two registers are shown, comprising each a plurality of numeral wheels, numbered 15 and 16 respectively, these wheels being loosely mounted on shafts 17 and 18, and marked on their peripheries with the characters 1 to 9 and 0, in progressive order. Gears 20, fast to the wheels 15 and 16, mesh with intermediate gears 19, which are driven by actuating means of any suitable type. Two revolution counting registers are employed for registering multipliers and quotients, these registers comprising numeral wheels 28 and 29, mounted upon a common shaft 30, and operated by any well known cycle counting means, engaging gears 31 and 32 fast upon the wheels. As shown, the wheels 28 are "ten-point" wheels, similar to wheels 15 and 16, while wheels 29 are of the "nineteen-point" type, having two series of figures 1 to 9, upon their periphery extending oppositely from a common 0 figure.

The characters representing the accumulated amounts are read through openings 21, 22, 36, in casings 23 and 24 of the register carriage. Detent arms 25 and 33, mounted on shafts 26 and 34, engaging the teeth of gears 20, 31 and 32, with which they are held in yieldable contact by springs 27 and 35, serving to prevent overthrow of the numeral wheels and to assure alignment of the same.

Clearing mechanism

A projection 37 is formed on the hub of each wheel 15 and 16, these projections cooperating with mechanism mounted in the frame of the carriage to clear the wheels. This mechanism comprises rock shafts 38 and 39, rectangular in cross section, upon which levers 40 are mounted. Two cam plates 41 and 42 are pivoted upon each lever 40, and upon rocking of shafts 38 and 39, rearward movement of the cam plates will bring the lug 43 or the lug 44 of each plate into contact with the projection 37 of the related wheel, depending upon the radial position of the projection, and will rotate the wheel forwardly or reversely to zero or other predetermined registering position. In this movement, plates 41 and 42 are guided by the engagement of the cam walls of slots 45 and 46 with the hubs of wheels 15 and 16. Spring 47 will return the members to normal position, as determined by stop pin 48.

For clearing the wheels 28 and 29, two aligned shafts 49, 49a are provided, of rectangular cross section, and adapted to be operated as a single shaft to clear wheels 28 and 29 by the action of clearing devices similar to those above-described.

Shafts 38 and 39 are rocked by a lifting movement imparted to clearing levers 50 and 58 respectively, these levers being rigidly mounted on shafts 51 and 59, connected by means of arms 52, 54, 60, 62 and links 53, 61 to the shafts 38 and 39. The amount of rotation given to the shafts is determined by stop pins 55, 56, 63, 64, and members are returned to normal position by springs 57.

Alternative clearing of revolution counters

Means are provided whereby the revolution counting wheels 28 may be cleared simultaneously with wheels 29, or whereby the wheels 29 may be cleared, and the registration of wheels 28 retained, the mechanism being adjusted to determine the one or the other action by means of shift lever 66. The clearing of one or both registers is accomplished by downward movement of clearing lever 65.

Clearing lever 65 is secured upon hollow shaft 68, having connection by means of arms 67 and 70 and link 72 to a shaft 69, extending to the opposite side of the carriage. Shaft 69 is connected to shaft 49a by means of arms 71, 73 and link 74. The amount of movement is limited by means of stop pins 75 and 76, contacting with lugs 77 of arm 67. The members are returned to normal position by the action of spring 78. Shaft 49, related to the wheels 28 may be connected to this clearing mechanism by means of arm 79, loosely mounted on hollow shaft 68, and connected to arm 80, fast upon shaft 49, by means of link 81. A two tooth clutch spool 82, is slidably mounted upon shaft 68, and controlled by shift lever 66, pivoted on bracket 84 and provided with lugs 83 engaging the spool. When lever 66 is moved to the 0 position, opposite to the position illustrated in Fig. 1, the teeth of spool 82 will engage corresponding slots of arm 79, clutching said arm to shaft 68, so that movement of clearing lever 65 will reset both sets of numeral wheels, 28 and 29 to zero. In the position of lever 66, illustrated in Fig. 1, this coupling will be disengaged, and wheels 29 only will be reset to zero. Arm 79 is maintained in normal position by the action of spring 85 and stop pin 86.

Spacing plates 87 and 88 are arranged between the numeral wheels of each register and are secured with clamp members 89. The end plates of the carriage structure are secured by spacing studs 90.

Half cent mechanism

Numeral wheels 91 and 92 are inserted in the registers 15 and 16 for use in calculations which are to be carried to the nearest half cent, in the manner described in Patent 1,781,320. In addition to the above-described clearing means, whereby these wheels may be brought to a zero registration, an additional set of clearing members 37, 40a, 41 and 42 are provided, the projection 37 of this series being located 180° from the position of the zeroizing projection, so that the numeral wheel will be reset to 5 registering positions. The rectangular shafts 38 and 39 are formed with reduced portions which are circular in cross section, and are adapted to be displaced endwise, so that the rectangular portion of the shaft may be engaged with the rectangular seats of the members 40a, and a circular cross sectional portion of the shaft engaged with the members 40, or vice versa. Thus the wheels 91, 92 will be reset to 0 or to 5 according to which of the members 40 or 40a are clutched to the shafts 38 and 39.

Shaft 38 is adjustable into one of three endwise shifted positions, so that the half cent mechanism may operate in connection with the resetting means, or that all of the wheels 15 may be reset to zero, or that a portion only of these wheels may be reset to zero and a registration left upon other of the wheels, this being governed by the position of a shift lever 93. Lever 93 is pivotally connected to bracket 94, and is provided with lugs 95 engaging clutch spool 96, rigidly secured upon shaft 38. Shaft 38 is latched in position as moved by lever 93, by spring 97, engaging one of another of the grooves in spool 96. The half cent position of the shift lever, as illustrated in Figs. 1 and 5, holds shaft 38 to the extreme right, in which position clearing member 40a of wheel 91 is fast upon the shaft, and the members 40 of all of the other wheels of this register are also fast to the shaft, so that operation of clearing

lever 50 will clear wheel 91 to 5 and the other wheels to 0.

Movement of lever 93 to its intermediate position, will slide shaft 38 part way to the left, bringing the circular cross sectional portion of the shaft in register with the member 40a, and bringing similar portions of the shaft in register with the members 40 of the nine right hand wheels. There are no round cross sectional portions opposite the remaining left hand wheels of this register, so that movement of clearing lever 50 will leave a registration on the nine right hand wheels, and will reset the remaining wheels to zero. Movement of lever 93 to the 0 position, opposite to the position illustrated in Fig. 1, will engage the rectangular cross sectional portion of shaft 38 with all of the numeral wheels of register 15, so that upon operation of lever 50 they will all be brought to zero.

Shaft 39 is similarly arranged for endwise movement, except that it is given only two adjusted positions, for clearing all wheels to zero, or for clearing in half cent operation. The position of the shaft is controlled by shift lever 98, pivotally connected to bracket 99 and provided with lugs 100 engaging clutch spool 101 rigidly secured upon shaft 39. The shaft is secured in adjusted position by means of a spring 102 engaging grooves of spool 101. In the half cent position, illustrated in Figs. 1 and 5, shaft 39 is moved to the extreme right, in which position a square cross sectional portion of the shaft engages member 40a related to wheel 92, to clear the wheel to 5. Since register 16 is used as a grand total register in half cent operations, the members 40 of all of the higher order wheels now register with the round cross sectional portions of shaft 38. Shaft 38 has no round cross sectional portions related to the wheels 16 to the right of wheel 92, so that these lower order wheels will always reset to zero. Operation of lever 58 will therefore leave a registration on the higher order wheels, will reset wheel 92 to 5 and the lower order wheels to zero. With lever 98 shifted to the 0 position, opposite to that illustrated in Fig. 1, the rectangular cross sectional portion of shaft 38 will engage the members 40 of each numeral wheel 16 and 92, so that upon operation of lever 58 all of the wheels will be reset to zero.

Full-stroke ratchet

Fig. 7 illustrates a full-stroke ratchet which prevent return of rock shaft 38 until it has been operated to its extreme rocked position. Arm 103 is rotated clockwise, as viewed in said Fig. 7 with shaft 38, notches 106 and 107 of said arm being engaged by tooth 104 of ratchet 105 during said movement, under the influence of spring 108. At full-stroke position, projection 109 of arm 103 contacts with and raises ratchet 105 and engages tooth 110 of said ratchet with a tooth 111 of latch 112, in which position ratchet 105 will be held with tooth 104 out of engagement with arm 103, so that shaft 38 may return freely to normal position. When shaft 38 reaches normal position a projection 113 of arm 103 will contact with latch 112 and lift tooth 111 out of engagement with tooth 110, allowing ratchet 105 to fall into position to cooperate with arm 103 during the next rocking movement of shaft 38.

Even cent mechanism

Application Serial No. 531,274 filed by Lee R. Brown on April 20, 1931, shows means whereby calculations may be carried to the nearest even cent, instead of to the nearest half cent, or five

mills, as above-described. A register of the present construction may be equipped for even cent registration, by substituting a special wheel 114 for the wheels 15 and 16 immediately to the left of

5 wheels 91 and 92. Each wheel 114 is marked on its periphery with ten characters as follows: 2, 2, 4, 4, 6, 6, 8, 8, 0, 0, half of these characters representing true registrations and the remainder representing arbitrary registrations of the
10 next higher even digit. When the numeral wheels are reset, the true value figures must be left in registering position, for which purpose the arm 40 of the clearing mechanism is provided with a plate 115 provided with a cam portion 116 and a
15 guide slot 117 engaging the hub of wheel 114. Five pins 118 project laterally from wheel 114, and are so arranged with relation to the figure markings on the periphery of the wheel that should an arbitrary figure stand in registering
20 position, a pin 118 will lie in the path of movement of cam portion 116, and will be moved thereby to bring a true value figure, corresponding to said arbitrary figure, into registering position, upon operation of clearing shaft 38. Should a
25 true value be registered on wheel 114, the pins 118 will be so positioned that cam portion 116 will be reciprocated without displacing the wheel. In normal position cam portion 116 lies within the rotary path of movement of pins 118, as indicated by the dotted outline, Fig. 8.

30 The above-described clearing mechanism is intended to be used alternatively with the same zero-setting means employed in connection with the other wheels, the shaft 38 engaging with the even cent clearing means or the zero clearing means according to the setting of levers 93 and 98, as previously described.

35 Wheel 114 may be arranged with two rows of characters, placed side by side, one row being used in connection with even cent calculations and the other for normal calculations. The two rows may be distinguished by characters of different color, or by other suitable means.

I claim:

1. In a register having a numeral wheel provided with a projection; the combination with a resetting device including a plurality of projections on said wheel, a plurality of projection engaging elements selectively operable to rotate
80 said wheel forwardly, and alternatively active element operable to rotate said wheel reversely, of a manually adjustable member, and means settable by said member and cooperating with said
85 resetting device selectively in accordance with said setting to bring a given character or a second character on said wheel into registering position.

2. In a register having a numeral wheel; resetting means including two projections on said wheel, two projection engaging devices each
90 adapted in cooperation with a corresponding projection to rotate said wheel forwardly or reversely to bring a related character on said wheel into registering position, an operating member common to said devices, and means settable to
95 render a selected device operative and to disable the other device.

3. In a register having a numeral wheel; resetting means including two projections on said wheel, two projection engaging devices each
100 adapted in cooperation with a corresponding projection to rotate said wheel forwardly or reversely to bring a related character on said wheel into registering position, an operating member common to said devices, and means including an end-
105 wise shiftable shaft and clutch connections between said shaft and said devices settable to render a selected device operative and to disable the other device.

4. In a register having a numeral wheel; resetting means including a plurality of projections on said wheel, a projection engaging element lying normally within the circular path of movement of said projections, and means for moving
110 said element across said path of movement to engage one of said projections and bring a corresponding character on said wheel into registering position.

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