

J. F. REIRDON.  
CALCULATING MACHINE.

APPLICATION FILED DEC. 15, 1911. RENEWED OCT. 20, 1914.

1,189,289.

Patented July 4, 1916.

3 SHEETS—SHEET 1.

Fig. 2

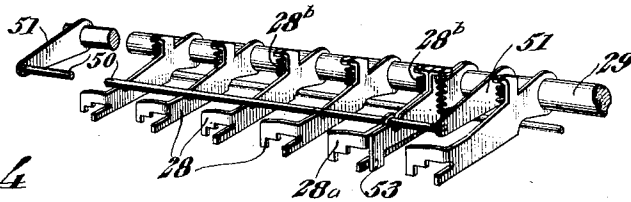


Fig. 4

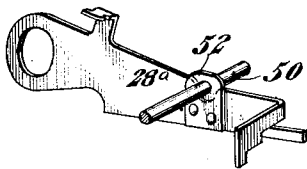


Fig. 8

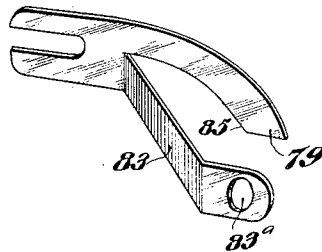
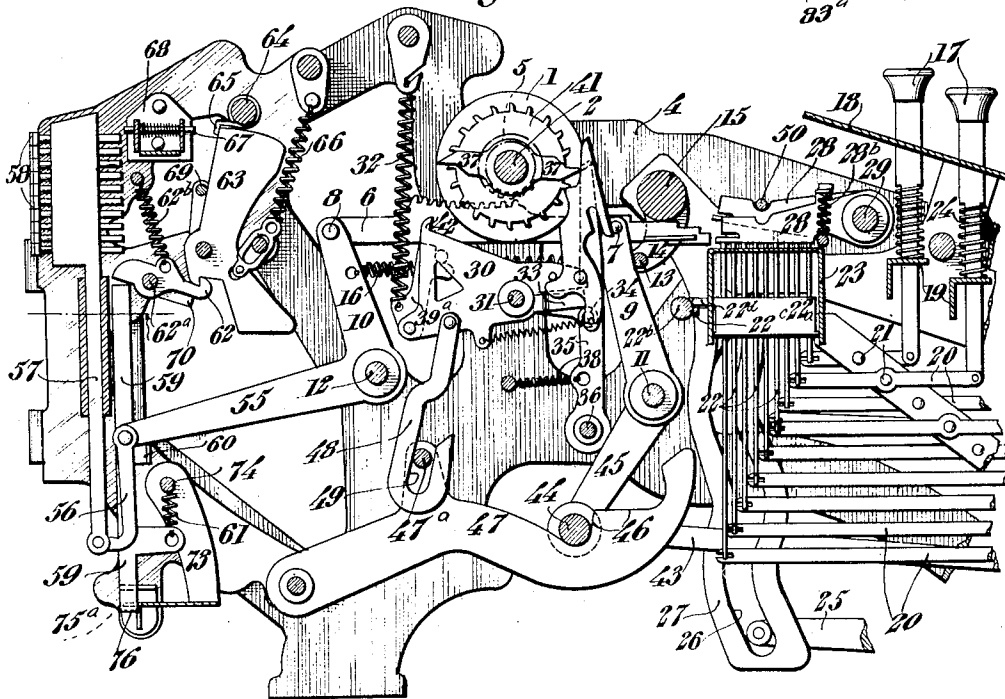


Fig. 1



WITNESSES:

*W. H. Gaudin.*  
*W. H. Fritz*

INVENTOR

*Joseph F. Reardon.*

BY

*Ralph S. Warfield.*  
ATTORNEY

J. F. REIRDON.  
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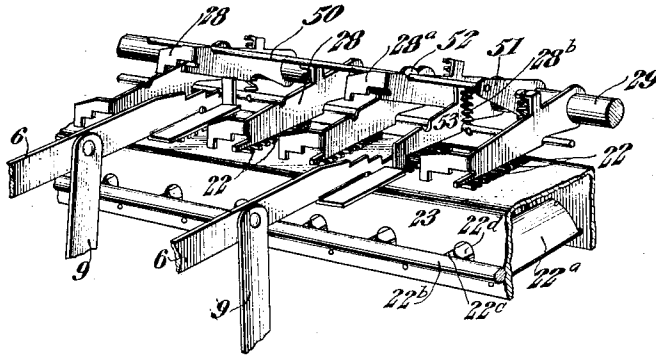
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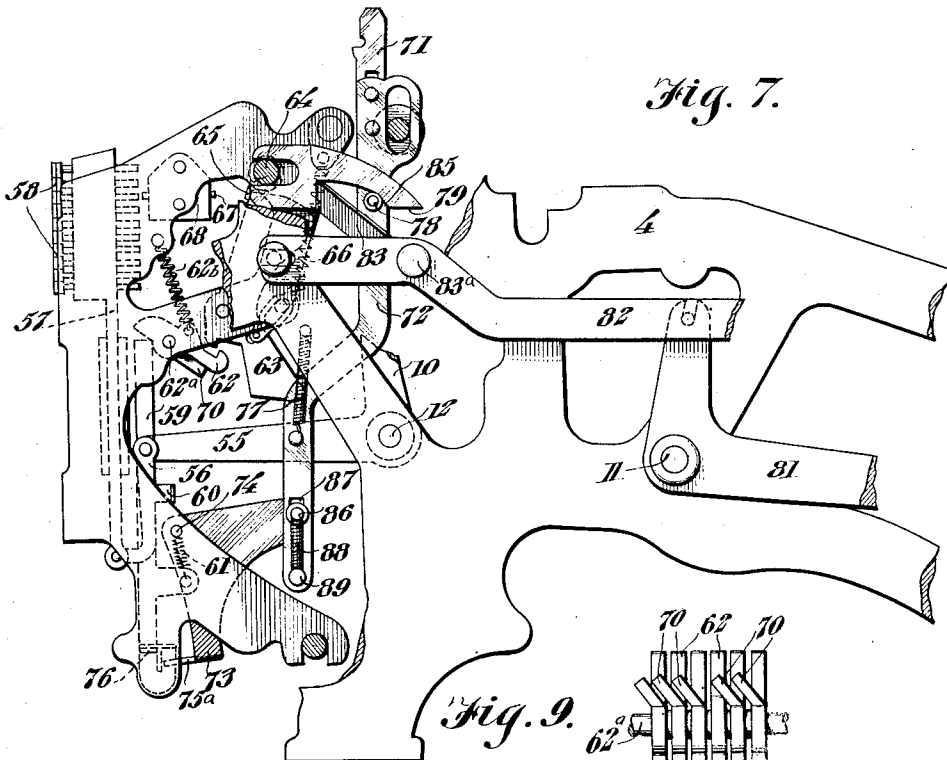
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3 SHEETS—SHEET 2.

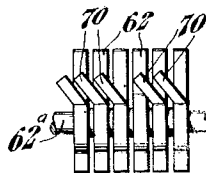
*Fig. 3.*



*Fig. 7.*



*Fig. 9.*



WITNESSES:

*W. H. Gardes.*  
*W. A. Freitz.*

INVENTOR

*Joseph F. Reardon.*  
BY  
*Ralph S. Warfield.*  
ATTORNEY

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3 SHEETS—SHEET 3.

Fig. 5

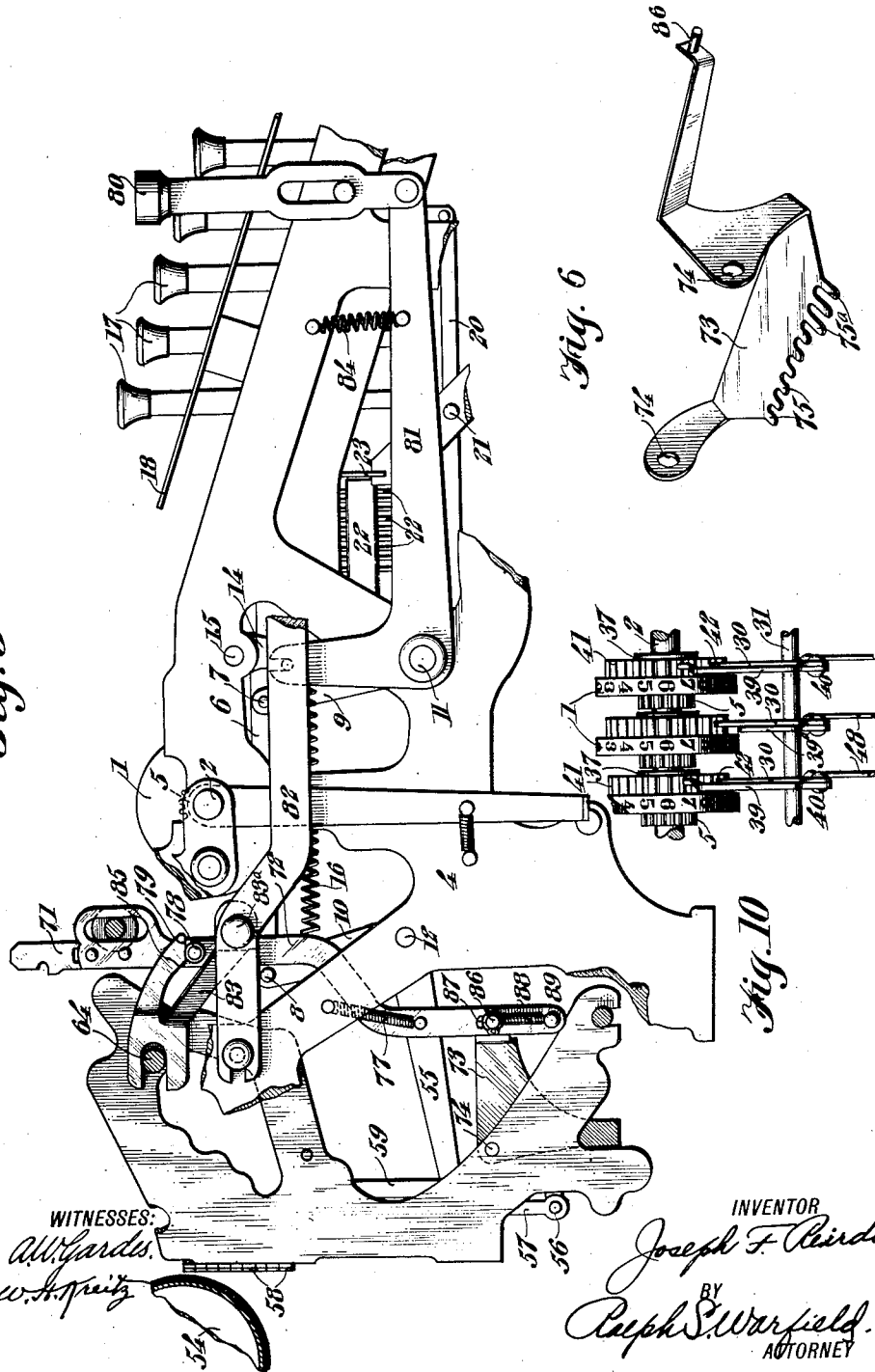


Fig. 6

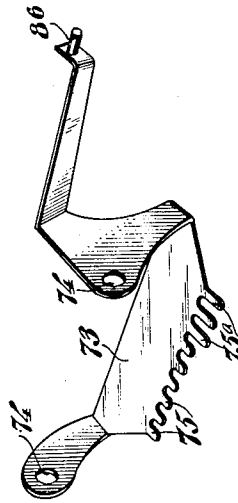
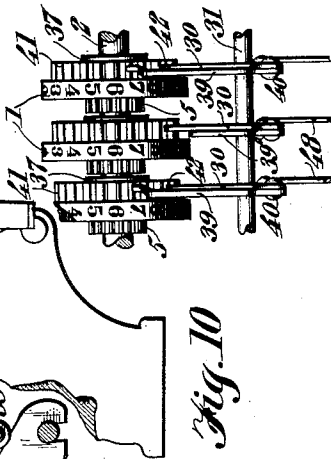


Fig. 10



WITNESSES:  
A. W. Gards.  
W. H. Smith

INVENTOR  
Joseph F. Reardon.  
BY  
Ralph S. Warfield.  
ATTORNEY

# UNITED STATES PATENT OFFICE.

JOSEPH F. REIRDON, OF KINGSTON, PENNSYLVANIA, ASSIGNOR TO THE ADDER MACHINE COMPANY, OF WILKES-BARRE, PENNSYLVANIA, A CORPORATION OF PENNSYLVANIA.

## CALCULATING-MACHINE.

1,189,289.

Specification of Letters Patent.

Patented July 4, 1916.

Application filed December 15, 1911, Serial No. 666,003. Renewed October 20, 1914. Serial No. 867,667.

*To all whom it may concern:*

Be it known that I, JOSEPH F. REIRDON, a citizen of the United States, residing at Kingston, Luzerne county, Pennsylvania, have invented new and useful Improvements in Calculating-Machines, of which the following is a specification.

This invention relates to calculating machines and more particularly to novel and improved means for counting the number of quantities, values, or items as they are registered on the machine. Thus, when an item, which may represent the amount of a check, the weight of the contents of a car, the weight of a bale, or what not, is set up on the keyboard, such operation also adjusts the item counting mechanism, to register a figure, as "1," for instance, to indicate the number of checks or cars or bales making up the item or items and when the quantity of the item or items is registered, the designating figure is likewise registered. The operation of the item counting mechanism is repeated whenever an item is set up and registered, so that a total is kept of the number of items registered. In addition thereto, means is provided to effect the printing of the total of the number of items, quantities or amounts registered, preferably in connection with means to print the total of such individual items.

One object of this invention is to effect the counting of items entirely automatically and without necessitating the operation of a special key or button whereby the machine is placed in condition to register the number of items as well as the amounts, and to this end, the item-counting mechanism is placed wholly under the control of the keyboard mechanism, so as to be set for operation whenever a key is depressed, the registration of the item-designating number taking place substantially simultaneously with the registry of the item itself. In other words, the machine is normally adapted to work of this nature.

Another object is to simplify and improve the mechanism whereby the item-counting operation is accomplished; to reduce the number of parts, and minimize the liability of the mechanism becoming disorganized.

It is often desirable that the item designating figure be registered only and not printed, as the imprint of such figures im-

mediately to the left of the items might tend to confuse.

A further object of the invention is to normally prevent the printing of the item-designating figures opposite the individual items, by means which requires no manual adjustment. This arrangement tends in a large measure to obviate mistakes, as it is not necessary for the operator to remember to set the non-printing mechanism to effective position in order that the space to the left of the individual items recorded be left blank. It is often desirable, however, that a total of the number of items registered be printed, and to this end means are provided to disable the non-printing mechanism at will. Preferably, the non-printing mechanism is so adjusted as to be disabled when the mechanism for printing a total of the items registered, is operated, whereby to permit the printing of a figure designating the total number of items registered, when the total of the amounts of such items is recorded.

In modern calculating machines, means is generally provided to enable the operator to prevent the printing of an amount, and a further object of this invention is to combine the means for preventing the printing of the separate item designations, with the usual non-print mechanism in such manner as not to interfere with the functions of either.

Other advantages will be more fully disclosed hereinafter and particularly pointed out in the claims.

In the accompanying drawings Figure 1 is a longitudinal sectional view, partly broken away, showing a Wales calculating machine to which the invention may be attached. Fig. 2 is a detail perspective, showing the mechanism for displacing the detent which normally arrests the item-counting mechanism, the mechanism being idle. Fig. 3 is a similar view, showing the mechanism in operative position, intermediate rack bars being omitted. Fig. 4 is a detail of the displaceable detent. Fig. 5 is a side view, partly broken away, illustrating the non-print mechanism and its connection with the total mechanism. Fig. 6 is a detail perspective of the non-print latch. Fig. 7 is a side view, partly broken away, showing the non-print latch released. Fig. 8 is a detail perspective of the lock or con-

nection between the total mechanism and the non-print mechanism, which normally prevents the printing of the item-designating numbers. Fig. 9 is a detail bottom plan view, looking in the direction of the arrow "X," showing (Fig. 1) a customary method of "splitting" the printing section to prevent the printing of ciphers to the right of the item-counting section. Fig. 10 is a detail rear view of the carrying or transfer mechanism, applied to the registering mechanism, showing one means whereby the operation of successive carrying mechanism elements is interrupted to prevent the transfer of an accumulation from the amount register onto the item-counting register.

Although this invention is illustrated and described as applied to the well-known Wales calculating machine, its use is not confined to that type of mechanism.

Some of the constructions shown in the drawings and hereinafter referred to, are likewise shown and described in the patents to Wales, 745,539 and 745,542, both dated December 1, 1903; 768,097, dated August 23, 1904; 794,205, dated July 11, 1905; and 797,032, dated August 15, 1905, and also in the patents issued to C. N. McFarland, #842,232, dated Jan. 29, 1907, and to C. N. McFarland and C. Wales, #880,157, dated Feb. 25, 1908.

The registering or accumulating mechanism includes a series of numeral wheels or counters 1, 1 (Fig. 1) individually rotatable on an axle 2 supported at its opposite ends for vibratory movement, in arms 3 (Fig. 5) pivoted to side frames 4. Pinions 5 fixed to turn with said counters are normally disengaged from a corresponding number of drive members or racks 6 (Fig. 1) pivotally secured at 7 and 8 to front and rear arms 9 and 10 swinging on a cross shaft 11 and a cross rod 12, respectively. A restraining and restoring bail 13 extending across the machine and supported by arms 14 carried by a rock-shaft 15 contacts the front arms 9 to hold the drive members at rest against the tension of drive springs 16. Said rock shaft is normally locked against turning by an arm 27 having a cam slot 26 therein traversed by a crank 25 secured to a main drive shaft (not shown).

A keyboard (Fig. 1) is supported between the forward ends of the side frames 4. Said keyboard comprises a plurality of keys 17, 17 arranged in rows or banks. The stems of the keys pass downwardly through a plate 18 and through cross braces 19 and connect with key levers 20 pivoted at 21 within the keyboard. The rear ends of the levers operate stops 22 whose upper ends project through the top of a housing 23 at the rear end of the keyboard. These stops are arranged in rows extending across the housing from front to rear (Fig. 3), and correspond

with the banks of keys. Springs 24 (Fig. 1) tend to retain the keys and stops in, and return them to, normal position. Each row of stops 22 lies in the path of the forward end of one of the driving members 6 of the counters, there being as many drive members as there are rows of stops.

In the adding operation, keys 17 in the respective banks, corresponding with the amount to be registered, are depressed. The depression of the keys rocks their levers 20 to project the upper ends of the correlated stops 22 in the corresponding rows, into the paths of the respective drive members 6. Swinging dogs 22<sup>a</sup> within the housing 23 lock the stops in their elevated positions in the usual manner. Rotation of the main drive shaft (not shown) rocks the crank 25, to cause its free end to traverse the cam slot 26 in the arm 27 fixed to the rock shaft 15, to turn said rock shaft and withdraw the bail 13 to release the drive members to the action of their springs 16, which thereupon propel the drive members until the latter are arrested by the projected stops 22, or by detents 28, preferably journaled on a cross rod 29 and overlying each row of stops 22. Said detents normally rest in the paths of the respective drive members, but the projection of a stop 22 in any row displaces the corresponding detent, (Fig. 3) usually leaving the others in effective position to arrest those drive members into whose paths of travel no stops have been projected. Said detents also prevent registering operation of the machine when the main shaft is turned on an idle or spacing stroke.

After the drive members have been arrested by the stops, the counters are tripped (by appropriate mechanism, not shown), to mesh their pinions 5 with the racks on the drive members 6. The main shaft is then returned to its initial position, thereby swinging the bail 13 to restore the drive members, through crank 25 and arm 27. The drive members, on their return, rotate the pinions in mesh therewith and the counters, to cause the latter to register an amount corresponding to the amount indicated by the keys depressed, after which the pinions are disengaged from the drive members, the latter having been restored to their normal positions. The main drive shaft on its return stroke, by a well known means (not shown) rocks a release bar 22<sup>b</sup> having tappets 22<sup>c</sup> which strike extensions 22<sup>d</sup> on the dogs 22<sup>a</sup> to cause the latter to free the stops 22, which thereupon are returned to normal position by the key springs 24. The return of the stops permits the displaced detents 28 to return, under the influence of their springs 28<sup>b</sup>, into the paths of the drive members 6.

The transfer or carrying of a number beyond the capacity of a counter or lower order to one of the next higher order may be

conveniently effected by a well-known carrying mechanism, including a series of rockers 30 (Fig. 1) mounted on a cross-rod 31 and coacting with the respective counters 1, 5 commencing with the "tens" counter. Said rockers are normally held in cocked or set position against the tension of springs 32, by catches 33 which seat on rests 34 on triggers 35 pivoted on a cross-rod 36 and normally lying in position to be tripped by 10 cams 37 turning with the counters of next lower order. When a counter is turned past the position at which the figure 9 is visible at the sight or reading line, the cam rocks 15 the trigger 35 against the action of its restoring spring 38 to release the rocker co-operating with the wheel of next higher order to the action of its spring 32, whereupon the rocker is tilted to cause a carrying 20 pawl 39 (Fig. 10) pivotally attached thereto at 40, to engage and turn a ratchet 41 fast on the counter of higher order. The rocker tilts sufficiently to cause the pawl to turn the ratchet and counter one step, after 25 which a tooth 42 on the rocker (Figs. 1 and 10), meshes with the ratchet to prevent over-rotation thereof. On the next stroke of the main drive shaft, the rocker is reset to idle position by links 43 connected to said 30 main shaft and to a resetting bar 44 supported in arms 45 swinging on shaft 11, and wiping along cams 46 formed on rocking levers 47, which levers, in turn, carry a rod 47<sup>a</sup>, connected with the respective rockers 35 by slotted links 48. The slots 49 in the links 48 enables the latter to move relatively to the rod 47<sup>a</sup> when the carrying mechanism is tripped. As this mechanism is well-known, further explanation thereof is unnecessary. 40

The series of counters 1, 1 may be separated or split to form an amount register and an item-counting register, by simply interrupting the operation of the transfer or 45 carrying mechanism between any two counters, as for instance between the sixth and seventh counters. This may be conveniently effected by deforming the carrying pawl for the seventh counter, as shown in Figs. 1 and 50 10, at 39<sup>a</sup>, so that it will not engage the ratchet 41, and hence a carry from the sixth counter will not be transferred onto the seventh counter. Of course, the pawl 39<sup>a</sup> may be omitted and the spring 32 connected directly to the rocker, as is done in some instances. The carrying pawls have an offset eye, as shown in Fig. 1, to which the lower end of the spring 32 is connected, the offset 55 operating to provide a clearance between the rear edge of the rocker and the spring, to eliminate any danger of contact between the rocker and spring.

In the normal operation of this invention, the setting up of an amount on any of the 65 six right hand banks of keys automatically

adjusts an item counting mechanism, whereby, when said amount is registered on the amount register, a designating number will also be registered on the item-counting register. This item-counting mechanism is 70 controlled wholly from the keyboard and is an incident to the operation thereof.

The depression of any key in any of the banks to the right of the split projects its corresponding stop 22 and displaces the detent 28 overlying that row of stops (see dotted lines Fig. 1). Said stop 22 when raised or displaced, also raises the first detent 28<sup>a</sup> to the left of the split out of the path of its co-acting drive member, which latter controls the first or unit counter of the item-counting register. This silencing or disabling of the detent 28<sup>a</sup> is preferably effected by the contact of any of the detents 28 to the right of the split with a universal 85 rod or bar 50 extending across said detents and mounted in swinging arms 51 on the bar 29, (see Figs. 2 and 3) said rod being connected to the detent 28<sup>a</sup>, as by an ear 52 fast thereon (see Fig. 4). When the detent 90 28<sup>a</sup> is displaced, it uncovers an auxiliary detent 53 lying adjacent but independent of the detent 28<sup>a</sup> and in the path of its drive member 6. Said auxiliary detent is shorter than the detent 28<sup>a</sup>, its length depending 95 upon the figure to be registered each time an amount is registered. Thus if the operator desires to count each check, as the amount thereof is registered, the auxiliary detent would be of such length as to permit the corresponding drive member to be 100 advanced a sufficient distance, so that it will turn the counter one step on its restoration to idle position. Should it be desired to count the number of pieces weighing a certain amount, a constant plural number of pieces being weighed at a time, the auxiliary 105 detent would be correspondingly shortened to permit its drive member a correspondingly longer travel before being arrested. 110

The drive member for the unit counter of the item-counter register, on its return by the drive shaft and bail 13, registers a figure on said unit counter designating for instance, the number of pieces making up 115 the amount registered. Obviously, the capacity of both the keyboard and the amount register may be varied to accommodate items containing a larger or smaller number of digits. 120

By controlling the item-counting register through the keyboard, the register remains idle during a blank or spacing stroke of the main drive shaft.

A glance at the reading line instantly reveals the total of the amounts and the total number of items. To differentiate the item register from the amount register, the counters of the two registers may be of contrasting colors. 130

In adding and listing machines, the registration of a figure is accompanied by the printing of said figure on a strip of paper fed around a platen 54 (Fig. 5). This is effected by arms 55 (Fig. 1), turning with the rear arms 10 and connected by links 56 with type carriers 57 in which are mounted individual types 58, corresponding with the figures on the counters and on the keys, there being a type carrier for each counter and bank of keys. Upon the initial stroke of the main drive shaft, the arms 10 swing forwardly and rock the arms 55 to elevate the type carriers until the types corresponding to the keys depressed are opposite the printing line on the platen. The impression mechanism to effect the printing of the types comprises a series of hammers 63, each of which is held in cocked or set position by an individual dog or latch 62 journaled on a rod 62<sup>a</sup>. A detent 65 common to all the hammers also locks the series of hammers against operation. The arms 55 when rocked upwardly on the initial stroke of the main shaft, are followed by trip bars or hammer releasers 59 which have lugs 60 pressed against the arms 55 by springs 61, said trip bars being adapted to contact the individual latches or dogs 62 to release and hold them idle (Fig. 7). As the main drive shaft nears the end of its initial stroke, mechanism (not shown) and operated, preferably from the resetting rod 44, turns a shaft 64 controlling the detent 65, to rock said detent to idle position, thereby releasing the hammers to the action of their springs 66 (Fig. 1) whereupon such of the hammers whose dogs have been withdrawn or silenced, are driven against plungers 67 mounted in a plunger box 68, in alinement with the printing line to effect an imprint of the types. The main shaft, on its return, again cocks the hammers through a resetting bail 69, (Fig. 1) the detent 65 being returned to catch over the hammers to retain them against the tensions of their springs 66. The arms 55 are also lowered by the return of the arms 10, thereby depressing the trip bars 59 against the tensions of their springs 61, to free the individual hammer dogs or latches 62 which are returned to effective position by their springs 62<sup>b</sup>.

The printing of ciphers to the right of all figures higher than units is effected by means of tails or projections 70 (Figs. 7 and 9) secured to the respective dogs or latches 62 and overlapping the next dog to the right in the series so that if only the third dog from the right, or the hundreds dog, is tripped by its bar 59, for instance, it will, by means of its tail 70, trip the second or tens dog, which in turn will trip the first or units dog, thereby freeing the hammers to the right of the "hundreds" dog. The drive members 6 for the counters are

permitted a slight forward movement, arrested by the detents 28, 28<sup>a</sup> on the initial stroke of the main shaft, to elevate the type carriers until the zero or cipher types lie opposite the printing line, so that the hammers freed by the tails may effect the imprint of said types.

In the present instance, the printing section is split between the sixth and seventh dogs in the manner shown in Fig. 9, as by omitting the tail 70 from the seventh dog. This split or division corresponds with the split in the carrying mechanism and operates to prevent the printing of a cipher to the right of the figure designating the item.

To register an item without listing or printing it, a non-print key 71 (Figs. 5 and 7) is provided, having a stem 72 connected with a latch 73 pivoted at 74 and having teeth 75. Depression of the key rocks the latch to interpose the teeth in the paths of shoulders 76 (Figs. 1 and 7) on the trip bars 59 to prevent the latter from tripping the dogs 62. A spring 77 withdraws or silences the non-print latch and restores the key when the latter is released.

As it might tend to confusion, if the item designating figures are printed in front of the figures indicating the respective amounts when listing, means is provided to prevent the imprint of such item-designating figures without affecting the imprint of the figures indicating the several amounts. Preferably, I adapt the non-print latch 73 for this purpose, by elongating such of the teeth 75 as cooperate with the trip bars co-acting with the hammer latches 62 of the left hand split section of the printing mechanism, as shown at 75<sup>a</sup> (Fig. 6). When the non-print latch is in its normal position (Fig. 1), the trip bars cooperating with the drive members of the amount register (the right hand section) escape the shorter teeth 75, but the teeth 75<sup>a</sup> remain in the paths of movement of the trip bars 59 cooperating with the drive members of the item register to prevent the listing of the item designating figures. The item register will indicate and accumulate the item-designating numbers, but said numbers will not be printed. The elongated teeth 75<sup>a</sup> do not affect the normal operation of the non-print latch, and merely extending farther over the shoulders 75 of the trip bars when the non-print key is depressed.

A stop 78, (Fig. 5) preferably located on the stem 72, strikes a catch 79, (Fig. 8), to arrest the releasing throw of the latch to retain the teeth 75<sup>a</sup> in effective position.

The printing of the total of the item-designating figures accumulated on the item register is effected through the usual total key 80, (Fig. 5), the depression of which rocks the usual angular lever 81 fast on shaft 11. One arm of said angular lever

is connected to the customary link or slide 82 to shift the latter. An arm 82 secured to the catch 79 is connected to the slide at 83<sup>a</sup>, whereby when the total key is operated 5 said catch is slid off of the stop 78 to permit the restoring spring 77 to completely retract said latch 73 to disengage the long teeth 75<sup>a</sup> from the corresponding trip bars 59. The subsequent operation of the main 10 drive shaft will effect the printing of the total of the amounts on both the item and amount registers and clear the machine, according to the usual operation of the Wales calculator. The printing of sub-totals without clearing the machine is obtainable 15 through the same mechanism in the customary manner. A spring 84 returns the special key 80 with its lever 81 and link 82 when the key is released, and the link, 20 during its return, shifts the catch 79 to bring a cam edge 85 thereof into contact with the stop 78 to depress the key stem 72 and return the long teeth 75<sup>a</sup> of the latch into the paths of the corresponding trip 25 bars. The dwell portion of the catch normally holds the non-print key partially depressed.

When a total is taken and the register cleared, the special key 80 is released and 30 restored prior to the return of the arms 55, which depress or restore the trip bars 59 to normal position, and consequently the non-print latch tends to return to effective position before the trip bars are restored, 35 owing to the positive operation of the cam 85 against stop 78. To prevent the teeth 75<sup>a</sup> from binding against the lower ends of the trip bars, a flexible connection is introduced between the catch 79 and the latch 73, 40 preferably where the stem 72 connects with the latch. Such flexible connection may comprise a pin 86 on the latch playing in a slot 87 in the key stem and normally held at one end of the slot by a spring 88 connected to said pin and to a stud 89 on the 45 stem. Positive depression of the key stem by the cam 85 when the trip bars are in elevated position, will first swing the non-print latch until the long teeth 75<sup>a</sup> strike 50 the lower ends of the trip bars (Fig. 7) after which further depression of the stem will merely tension the spring 88. As soon as the trip bars have been returned to normal position, the spring 88 will swing the latch 55 to interpose the long teeth 75<sup>a</sup> into the paths of their corresponding trip bars, at which time the pin 86 will contact the end of the slot 87 to prevent the shorter teeth of the non-print latch from swinging into effective 60 position.

When it is desired to list the item-designating figures opposite the respective amounts, as when listing checks by number and amount, for instance, the long teeth 75<sup>a</sup> 65 of the non-print latch 73 are omitted, as

well as the connection between the total key and non-print latch. In a machine adapted for work of this general nature, the capacity of the keyboard mechanism is increased by the addition of banks of keys 70 and rows of stops to cooperate with the respective drive members of the counters of the item register, the operation being exactly the same, except that certain of the stops controlled by the unit bank of keys 75 for the item register will raise both detent 28<sup>a</sup> and its auxiliary detent 53 when it is desired to register a higher unit than is ordinarily permitted by the auxiliary detent.

Changes may be made in the form and arrangement of the several parts without departing from the spirit and scope of the invention. 80

I claim—

1. In a calculating machine, the combination with a series of counters, on certain of 85 which, amounts are accumulated, and on the remainder of which, item designating numbers are accumulated; printing mechanism associated with the respective counters; and a keyboard to control the amounts registered 90 on the counters; of means set for operation by the introduction of an amount on the keyboard, to enable the automatic registration of an item designating number 95 on the appropriate counters, as an incident to the registration of an amount on the remaining counters; and non-print mechanism normally preventing listing the item indicating numbers, and variously adjustable 100 to prevent or permit listing the amount, or the total of the item designating numbers with the total of the amounts.

2. In a calculating machine, the combination with a series of counters, on certain 105 of which amounts are accumulated, and on the remainder of which, tally figures are accumulated; drive members for the respective counters; keyboard mechanism, including keys; and shiftable detents controlled 110 by the keys, and normally in the paths of the respective drive members, to prevent a registering operation of the counters; of means whereby a detent cooperating with the drive member of one of the tally figure 115 counters is displaced by the displacement of any of the detents cooperating with the amount counters; and an auxiliary detent to arrest said drive member associated with the figure counter, after said drive member 120 has advanced a predetermined distance, to automatically effect the registration of a tally figure as an incident to the registration of an amount.

3. In a calculating machine, the combination with a series of counters; a drive 125 member for each counter; and transfer mechanism for the counters, amounts and item-designating figures being separately accumulated on different sets of counters 130



of the same series; a keyboard mechanism including keys; and shiftable detents controlled by the keys and normally lying in the paths of the respective drive members; of a universal bar connected to a detent co-operating with one of the item-designating counters, and arranged to be struck by any of the detents coöperating with the amount counters to displace the first-named detent; and an auxiliary detent uncovered by the displacement of said first-named detent, to arrest its drive member at a predetermined point in its travel, to enable the registration of a designating figure each time an amount is registered.

4. In a calculating machine, the combination with individually rotatable counters; a drive member for each counter; and transfer mechanism for the counters; of a keyboard mechanism including keys, stops operated thereby, a series of shiftable detents controlled by the stops and normally lying in the paths of the respective drive members to prevent a registering operation of the counters; a universal bar connected to a detent intermediate the ends of the series of detents, said bar arranged to be struck by any of the detents to one side of said first-named detent to displace the first-named detent; and an auxiliary detent controlled by the stops and uncovered by the displacement of said first-named detent, to arrest its drive member at a predetermined point in its travel, to enable the registration of a designating figure each time an amount is registered, and itself displaced by a stop when a designating figure of a higher order is to be registered.

5. In a calculating machine, the combination with individually rotatable counters; and drive members for the respective counters; of keyboard mechanism including keys, stops operated thereby and arranged in groups, and detents controlled by the respective groups of stops and normally lying in the paths of the respective drive members to prevent a registering operation of the counters; means whereby one of said detents is displaced when any of the remaining detents to one side thereof is disabled; and an auxiliary detent of less length than the displaceable detent, to arrest its drive member after said drive member has traveled a predetermined distance, to effect the registration of a predetermined amount on the corresponding counter, when the displaceable detent is shifted to idle position.

6. In a calculating machine, the combination with a series of counters, forming amount and item-counting registers, respectively; a drive member for each of the counters; and transfer mechanism for the counters; of a series of shiftable detents, one for each drive member, to normally pre-

vent a registering operation of the counters; a swinging frame, including a universal bar connected to one of the detents associated with the item-counting register, and arranged to be operated by any of the detents associated with the amount-register, whereby said counting-register detent is displaced; and an auxiliary detent uncovered when said counting-register detent is displaced by the operation of an amount-register detent, to coöperate with its drive member and arrest the latter after it has traveled a predetermined distance, to enable the registration of a designating figure each time an amount is registered.

7. In a calculating machine, the combination with printing mechanism; a correlated series of counters; and keyboard mechanism on which amounts may be set up for registration and accumulation in the counters; of means controlled by the keyboard mechanism, to enable the automatic registration on one part of the counters, of a designating figure related to an amount set up on that part of the keyboard mechanism corresponding with a second part of the counters on which such amount is accumulated, the automatic registration of the figure taking place as an incident to the registration of the correlated amount; adjustable printer disabling means normally in position to disable that portion of the printing mechanism corresponding with the first part of the counters; rows of keys corresponding with the first part of the counters to enable the registration and accumulation on said counters, of figures set up on the corresponding rows of keys; and means to control the adjustable printer-disabling means, to disable the printing mechanism and thereby prevent the listing of amounts set up on that side of the keyboard which corresponds to the second part of the counters; or to prevent the printing of totals of said amounts and of the figures set up on the remaining side of the keyboard, which corresponds with the first part of the counters, or of the totals of the figures automatically registered and accumulated in the first part of the counters.

8. In a calculating machine, the combination with a series of counters; and keyboard mechanism; of means controlled by said keyboard mechanism to enable the automatic registration on a part of the counters, of a figure designating the numbers of items making up an amount, as an incident to the registration of such amount on the remaining counters; printing mechanism correlated with the series of counters; and means to normally disable that portion of the printing mechanism correlated with the counters on which the designating figures are accumulated, while permitting the listing of the amounts registered on the remaining coun-

ters, said last-named means adjustable to prevent the listing of amounts as well.

9. In a calculating machine, the combination with counting mechanism adapted to separately accumulate amounts and item-designating figures simultaneously; keyboard mechanism to control the registration of amounts on the counting mechanism; and split printing mechanism correlated to the counting mechanism and including type carriers, types mounted therein, impression devices, and a trip member for each impression device; of a non-print mechanism comprising a latch having a series of teeth to engage the tripping members to prevent the impressions of the types, at least one of said teeth being longer than the others to normally prevent the imprint of the types of the type carriers on one side of the split, and means to shift the latch to bring the remaining teeth into effective position.

10. In a calculating machine, the combination with counting mechanism adapted to separately accumulate amounts and item-designating figures simultaneously; keyboard mechanism to control the registration of amounts on the counting mechanism; and split printing mechanism correlated to the counting mechanism and including type carriers, types mounted therein, impression devices, and a trip member for each impression device; of a latch to normally lock at least one of the tripping members against operation to prevent type impressions, on one side of the split, means to render the latch ineffective, a catch to hold said latch effective, and a key to control said catch.

11. In a calculating machine, the combination with counting mechanism adapted to separately accumulate amounts and item-designating figures simultaneously; keyboard mechanism to control the registration of amounts on the counting mechanism; and split printing mechanism correlated to the counting mechanism and including type carriers, types mounted therein, impression devices, and a trip member for each impression device; of a latch to normally lock at least one only of the tripping members, to prevent type impressions, on one side of the split, a stem connected to the latch, means to render the latch ineffective, a catch normally engaging the stem to hold the latch in normal effective position, a key to control the latch, and an independently operable key on the stem to throw the latch, to prevent any type impressions.

12. In a calculating machine, the combination with counting mechanism adapted to separately accumulate amounts and item-designating figures simultaneously; keyboard mechanism to control the registration of amounts on the counting mechanism; and split printing mechanism correlated to the counting mechanism and including type car-

riers, types mounted therein, impression devices, and a trip member for each impression device; of a latch to normally lock at least one of the tripping members to prevent type impressions on one side of the split, a stem connected to the latch, means to render the latch ineffective, a catch engaging a stop on the stem to hold the latch effective, and having a cam portion, a key to release the catch, and means to return the catch to operative position to cause the cam portion to engage the stop and restore the latch to effective position.

13. In a calculating machine, the combination with counting mechanism adapted to separately accumulate amounts and item-designating figures simultaneously; keyboard mechanism to control the registration of amounts on the counting mechanism; and split printing mechanism correlated to the counting mechanism and including type carriers, types mounted therein, impression devices, and a trip member for each impression device; of a latch which normally engages at least one of the tripping members to prevent type impressions on one side of the split and permits the operation of the remaining tripping members, means to disable the latch, a catch to hold the latch effective, a key to release the latch to the action of its disabling means, restoring means to return the catch to operative position, said catch having a cam surface to return the latch to effective position, and a flexible connection interposed between the catch and latch to prevent the latter from binding against the trip members on its restoration to effective position.

14. In a calculating machine, the combination with a series of counters on which amounts and tally figures are separately accumulated; drive members for the respective counters; keys to control the registration of amounts on the counters; and printing mechanism associated with the counters; of shiftable detents controlled by the keyboard, and normally in the paths of the drive members to prevent a registering operation of the counters; a universal bar connected to one of the detents coacting with a drive member associated with one of the counters on which the tally figures are registered and accumulated, said bar operable by any of the detents co-acting with the drive members associated with the counters on which the amounts are accumulated, to displace the detent to which the bar is connected; an auxiliary detent to arrest the drive member of the detent thus displaced to enable the registration of a tally figure as an incident to the registration of an amount; a non-print latch to normally prevent the imprint of such tally figure; and a total key to control the latch and enable its retraction to idle position, to permit the imprint of the

totals of the tally figures, and of the amounts.

15. In a calculating machine, the combination with several counters, a drive member for each counter, transfer mechanism for the counters, said transfer mechanism being interrupted to separate the counters into an item-counting register and an amount register, respectively; and printing mechanism, split at a point coincident with the point of interruption of the transfer mechanism, of a keyboard mechanism, including keys; shiftable detents normally lying in the paths of the respective drive members to prevent adding operations of the counters, and controlled by the keys; means controlled by the operation of any of the detents of the amount register to displace one of the detents coacting with a drive member of the counting register, an auxiliary detent uncovered by said displaced detent and normally lying in the path of its drive member to arrest said last-named drive member at a predetermined point in its travel, to enable the registration of a designating figure each time an amount is registered, and means to prevent the printing of said designating figure.

16. In a calculating machine, the combination with keyboard mechanism, detents controlled therefrom, a series of counters, a drive member for each counter normally arrested by said detents to prevent rotation of the counters, a split transfer mechanism for said counters, to separate the latter into item counting and amount registers, respectively; and a printing section split to correspond with the split in the transfer mechanism and controlled by the several drive members; of a universal bar connected to one of the detents of the counting register, operable by any of the detents of the amount register to displace said counting register detent, an auxiliary detent normally in the path of its drive member and uncovered when said counting register detent is displaced, to arrest the coacting drive member at a point in its travel which will enable the registration of a predetermined designating figure whenever an amount is registered, a latch normally coacting with the split portion of the printing mechanism corresponding with the counting register to prevent the imprint of such designating figure, and a special key to control the latch to shift the latter to idle position, to enable a total of the number of items to be printed when a total of the amount of said items is printed.

17. In a calculating machine, the combination with a series of counters; drive members for the respective counters; and a split printing section coacting with the counters; of a keyboard mechanism to control the registration of amounts on the counters; means controlled only by the keyboard mechanism

to automatically effect the registration of a tally figure on a part of the counters as an incident to the registration of an amount set up on the keyboard and registered on others of the counters; a latch common to both sides of the split printing section to normally prevent the imprint of the tally figure accumulated on the counters; a special key to effect the release of the latch when a total of the registered amounts is to be printed, to enable the printing of a total of the tally figures; and a separate means to adjust the latch.

18. In a calculating machine, the combination with a series of counters, keyboard mechanism therefor; printing mechanism for the counters including type carriers, types mounted therein, impression devices, and a trip member for each impression device; of a latch common to all the trip members which normally engages at least one of the trip members to control the impression devices co-acting with a part of the counters to prevent the operation of such impression devices, and plural means to control the latch, and operable independently, to lock all the trip members against operation, or to release all trip members for operation, respectively.

19. In a calculating machine, the combination with a series of counters, keyboard mechanism therefor; printing mechanism for the counters including type carriers, types mounted therein, impression devices; and a trip member for each impression device, of a latch common to all the trip members, which normally engages at least one of the trip members to control the impression devices coacting with a part of the counters, to prevent the operation of such impression devices, a catch to hold the latch in normal position, means to shift the catch to permit the operation of the normally locked trip member, and means to shift the latch to lock all the trip members against operation.

20. In a calculating machine, the combination with a series of counters, keyboard mechanism therefor; printing mechanism for the counters including type carriers, types mounted therein, impression devices; and a trip member for each impression device, of a latch normally engaging the trip members which control the impression devices coacting with a part of the counters, to prevent the operation of such impression devices, a catch to hold the latch in said position, means to disable the latch, a key to release the catch, means to restore the catch to cause the latter to positively return the latch to its normal effective position, and a yielding connection between the catch and latch to prevent the latch from binding against the trip members, said connection so arranged as to permit the latch to auto-

5 matically return to normal position after the return of the trip members to idle position.

21. In a calculating machine, the combination with a series of counters; drive members therefor; detents normally in the paths of the drive members to prevent an adding operation of the counters; and keys arranged in denominational rows, and adapted to displace the detents and control registrations on the counters; of an auxiliary detent associated, with one of the other detents; means whereby the operation of a key in any of several denominations will displace said last-named detent to uncover the auxiliary detent in the path of its drive member to arrest said drive member so as to enable the automatic registration of a tally figure as an incident to the registration of an amount set up on the keys; a split printing mechanism coöperatively related with the several counters; and means to normally prevent printing the tally figures, and adjustable at will to prevent printing the amounts.

22. In a calculating machine, the combination with an accumulating mechanism split into sections to prevent overrunning of the total of the items registered from one section onto the adjacent section; keyboard mechanism to control the registration of items on the accumulating mechanism; and printing mechanism associated with the accumulating mechanism; of means controlled by the keyboard mechanism to effect the registration of an item-designating figure to one side of the split each time an item is registered; a non-print device to normally disable that part of the printing mechanism corresponding with the split section of the accumulating mechanism on which the item-designating figures are registered, and being operable at will to prevent the imprint of an item; and means to render the non-print device ineffective when taking a total.

23. In a calculating machine, the combination with an accumulating mechanism split into sections to prevent overrunning of the total of the amounts from one section onto the next adjacent section; a split printing mechanism associated therewith; and a keyboard mechanism to control the registration of items on the accumulating mechanism; of a device controlled by the keyboard mechanism to enable the registration of a tally figure to one side of the split each time an amount is registered; adjustable means normally effective to suspend the action of the printing mechanism to one side of the split and common to both sides of the split printing mechanism, to prevent printing of amounts; and devices to disable the adjustable means when taking a total.

24. In a calculating machine, the com-

bination with a series of counters, on which tally figures and amounts are separately accumulated; a transfer mechanism for the counters, interrupted to prevent overrunning of the total of the amounts onto the counters reserved for the tally figures; a split printing section associated with the counters; and a keyboard mechanism to control the amounts registered on the counters; of a device controlled by the keyboard mechanism to enable the automatic registration of a tally figure to one side of the split in the transfer mechanism as an incident to the registration of an amount on the other side of such split; means common to both sides of the split in the printing section, and normally effective to suspend the action of the printing mechanism to one side of the split therein, said means adjustable to suspend the printing action on both sides of the split; and means to disable the last-named means when taking a total.

25. In a calculating machine, the combination with an accumulating mechanism, including drive members, and comprising amount and item registers, respectively; keyboard mechanism; and detents controlled from the keyboard to normally arrest the drive members; of means whereby a detent on the item register side of the machine is displaced through the shifting of any detent on the amount register side of the machine, to ineffective position, and a normally idle auxiliary detent arranged adjacent the displaceable detent on the item-designating register side, and uncovered by said detent when displaced, to arrest its corresponding drive member, and enable the registration of an item-designating figure, as an incident to the registration of the amount.

26. In a calculating machine, the combination with an accumulating mechanism, including drive members, and comprising amount and item-designating registers, respectively; keyboard mechanism; and detents controlled from the keyboard to normally arrest the drive members; of means whereby a detent coacting with the item-designating register is displaced through the shifting of any detent coacting with the amount register, to ineffective position; and an auxiliary detent uncovered by the displaced detent, to arrest its drive member and enable the registration of a designating figure each time an amount is registered; said auxiliary detent being controlled by the keyboard mechanism when a designating unit of higher value is to be registered.

27. In a calculating machine, the combination with an accumulating mechanism comprising amount and item-counting registers; keyboard mechanism; and printing mechanism split for the respective registers; of non-print means to normally pre-

vent the imprint of the item-designating figure; and plural means to control said non-print means, to prevent the imprint of the amount, or to free the printing mechanism for operation.

28. In a calculating machine, the combination with an accumulating section, comprising amount and item-counting registers, respectively; and a correspondingly split printing section for both registers, including normally locked hammers, and separate hammer releasers for the individual hammers; of non-print means common to all the releasers, which means normally lies in the path of that releaser correlated with the hammer corresponding with the units column of the item-counting register; and means to shift the non-print means to prevent the release of any of the hammers.
29. In a calculating machine, the combination with an accumulating section, comprising amount and item-counting registers, respectively; and a correspondingly split printing section for both registers, including normally locked hammers, and separate hammer releasers for the individual hammers; of non-print means common to all the releasers, which means normally lies in the path of that releaser correlated with the hammer corresponding with the units column of the item-counting register; and means to shift the non-print means to prevent the release of any of the hammers, and to release all the hammers for operation, respectively.
30. In a calculating machine, the combination with an accumulating section, comprising amount and item-counting registers, respectively; and a correspondingly split printing section for both registers, including normally locked hammers, and separate hammer releasers for the individual hammers; of non-print means common to all the releasers, which means normally lies in the path of that releaser correlated with the hammer corresponding with the units column of the item-counting register; means to enable the retirement of the non-print means to permit the operation of all the hammers, and to positively return the non-print means to normal position; said non-print means being flexible so as to yield prior to the restoration of the hammer releasers to enable the latter to return to idle position without injury.
31. In a calculating machine, the combination with an accumulating section, comprising amount and item-counting registers, respectively; and a correspondingly split printing section for both registers, including normally locked hammers, and separate hammer releasers for the individual hammers; of non-print means common to all the releasers, which means normally lies in the path of that releaser correlated with

the hammer corresponding with the units column of the item-counting register; means to enable the retirement of the non-print means to permit the operation of all the hammers, and to positively return the non-print means to normal position; and a yielding connection between said non-print means and the means which positively restores it to normal position to enable the hammer releasers to return to idle position without injury, and to subsequently return the non-print means to normal position relatively thereto.

32. In a calculating machine, the combination with an accumulating section, comprising amount and item-registers; and a printing section cooperating therewith and correspondingly divided, and including normally locked printing hammers, and individual releasers for the respective hammers; of means to effect the registration of a figure on the item-counting register, as an incident to the registration of an amount on the remaining register; a non-print member normally in the path of at least one of the hammer releasers to prevent the imprint of the item-designating figure; means tending to disable the non-print member; and a catch to hold said non-print member in normal position.

33. In a calculating machine, the combination with an accumulating section comprising amount and item-registers; and a printing section cooperating therewith and correspondingly divided, and including normally locked printing hammers, and individual releasers for the respective hammers; of means to effect the registration of a figure on the item-counting register, as an incident to the registration of an amount on the remaining register; a non-print member normally in the path of at least one of the hammer releasers to prevent the imprint of the item-designating figure; means tending to disable the non-print member; and a catch to hold said non-print member in normal position; optionally operable means to displace the catch to free the non-print member to the action of its disabling means; means to restore said optionally operable means; and a cam driven by said last named means, to return the non-print member to normal position.

34. In a calculating machine, the combination with an accumulating section comprising amount and item-registers; and a printing section cooperating therewith and correspondingly divided, and including normally locked printing hammers, and individual releasers for the respective hammers; of means to effect the registration of a figure on the item-counting register, as an incident to the registration of an amount on the remaining register; a non-print member normally in the path of at least one of the

hammer releasers to prevent the imprint of the item-designating figure, means tending to disable the non-imprint member, and a catch to hold said non-print member in normal position; optionally operable means to displace the catch to free the non-print member to the action of its disabling means; means to restore said optionally operable means, and a cam driven by said last named means, to return the non-print member to normal position, and overcome the disabling means; said non-print member being yieldable to permit the restoration of the hammer releasers.

35. In a calculating machine, the combination with an accumulating section, comprising amount and item-counting registers; drive members therefor; and detents to arrest the drive members and prevent a registration; of a series of keys to control the detents coacting with the drive members of the amount register, the depression of any of which keys displaces a detent cooperating with a drive member of the counting register; and an auxiliary detent normally in the path of the drive member corresponding with the displaced detent and uncovered by said detent when displaced to arrest the drive member to enable the registration of an item-designating figure as an incident to a registration on the amount register.

36. In a calculating machine, the combination with a split accumulating mechanism; and a printing mechanism associated therewith; including normally locked hammers, and individual trip members to release the hammers; of means to automatically enable the registration of an item-designating figure to one side of the split in the accumulating section, for every amount entered on the machine, accumulated or printed, or both; a non-print latch having long and short teeth, the long tooth normally lying in the path of a trip member to prevent the imprint of the item-designating figure; total mechanism; and devices controlled thereby to enable the withdrawal of the non-print latch to ineffective position.

37. In a calculating machine, the combination with a split accumulating mechanism; and a printing mechanism associated therewith; including normally locked hammers, and individual trip members to release the hammers; of means to automatically enable the registration of an item-designating figure to one side of the split in the accumulating section, for every amount entered on the machine, accumulated or printed, or both; a non-print latch having long and short teeth; a catch to hold the non-print latch with the long tooth in position to prevent the imprint of the item-designating figure; and total mechanism connected with the catch to withdraw the

latter and enable the non-print latch to shift to ineffective position, when taking a total.

38. In a calculating machine, the combination with a series of counters; and a split printing mechanism; of a member to normally disable the printing mechanism on one side of the split, and to disable the entire printing mechanism at the will of the operator; and means to render said disabling member ineffective to permit the entire printing mechanism to operate.

39. In a calculating machine, the combination with a series of counters; a split printing mechanism; and a total mechanism; of a member which normally disables the printing mechanism on one side of the split, said disabling member adapted to disable the entire printing mechanism at the will of the operator; and means controlled by the total mechanism to render the disabling member ineffective, to permit the entire printing mechanism to operate.

40. In a calculating machine, the combination with a series of counters; a split printing mechanism; and a device operable at will to prevent the imprint of items on both sides of the split; of a totaling mechanism to normally hold the non-print device in position to prevent the imprint of items on one side of the split; and means to render the non-print device wholly ineffective when the total mechanism is operated.

41. In a calculating machine, the combination with a series of counters; and a printing mechanism; of a non-print mechanism normally adapted to disable a portion only of the printing mechanism, and operable at will to disable the entire printing mechanism.

42. In a calculating machine, the combination with registering and printing mechanisms; of a device normally effective to disable a portion of the printing mechanism; and independent means operable at will, one of which renders the device effective to disable the entire printing mechanism, and the other of which renders the device wholly ineffective when a total is to be taken.

43. In a calculating machine, the combination with registering and printing mechanisms; of a device normally effective to disable a part of the printing mechanism; and independently operable means to control said device, to wholly disable the printing mechanism, or to release the entire printing mechanism for operation, respectively.

44. In a calculating machine, the combination with a series of counters; and keyboard mechanism; of means controlled by said keyboard mechanism to enable the automatic registration on one part of the counters; of a figure related to an amount set up on the keyboard mechanism, as an

incident to the registration of such amount  
on another part of the counters; printing  
mechanism corresponding with the counters;  
adjustable printer disabling means nor-  
5 mally in position to disable that portion of  
the printing mechanism corresponding with  
the counters on which automatic registra-  
tion and accumulation of figures occurs, and  
permit listing of the amounts set up on the  
10 keyboard and registered in the remaining  
part of the counters; and means operable

at will, to control the printer disabling  
means, to prevent the listing of such  
amounts as well, or to prevent the printing  
of totals of both the accumulated amounts 15  
and the accumulated figures, or to prevent  
the printing of the total of the automatically  
registered figures only.

JOSEPH F. REIRDON.

In the presence of—  
CHAS. V. WILGUS,  
FRED E. ALLEN.