N. WHITE.

ADDING AND LISTING MACHINE.

APPLICATION FILED MAY 29, 1909.

1,018,285.

Patented Feb. 20, 1912.

5 SHEETS—SHEET 1.

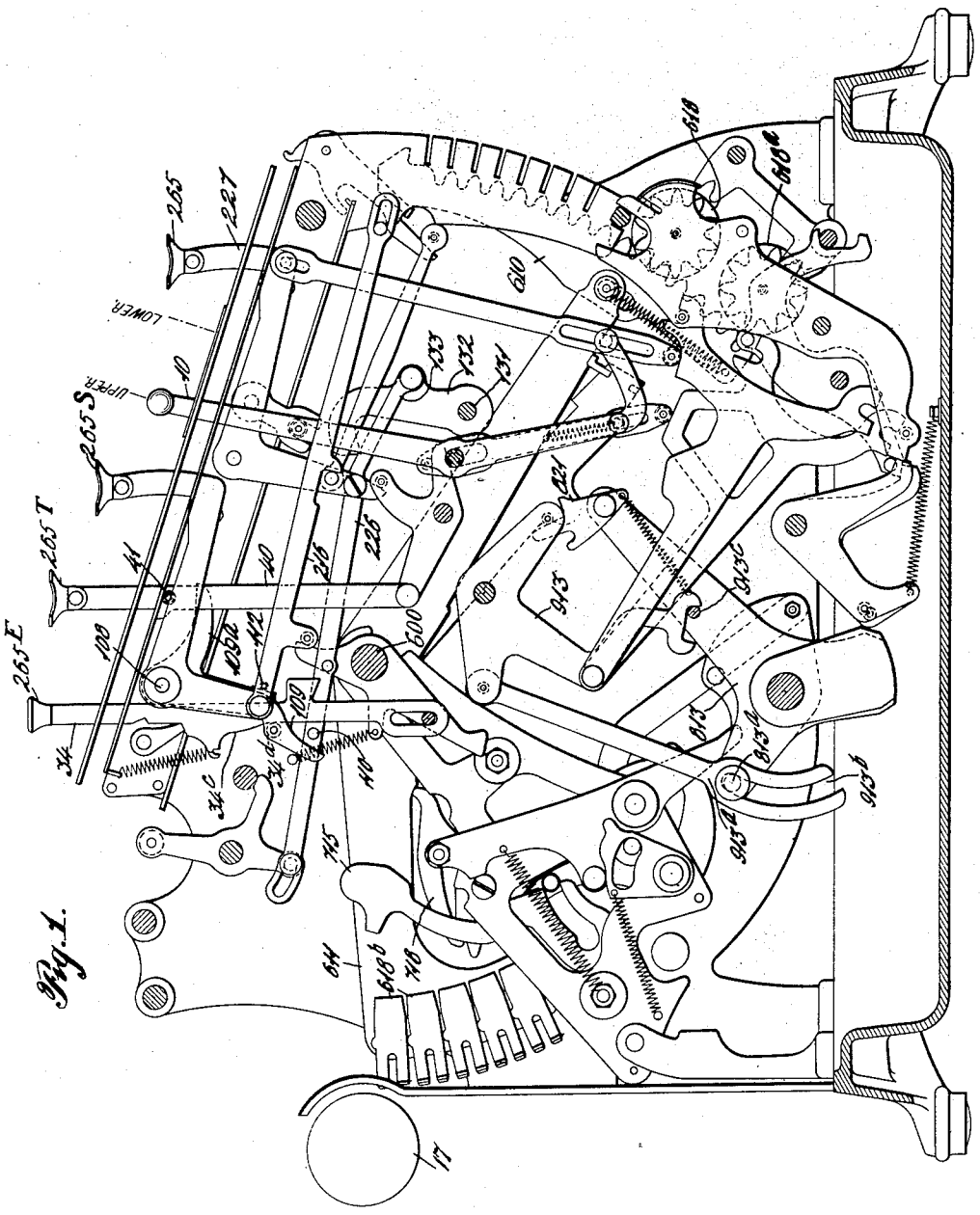

Fig. 1.

Witnesses.
E. R. Barrett
Louis B. Ewin

Inventor.
Nelson White
by Rector Hoadley Bond
his Attys.

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5 SHEETS—SHEET 2.

Fig. 2.

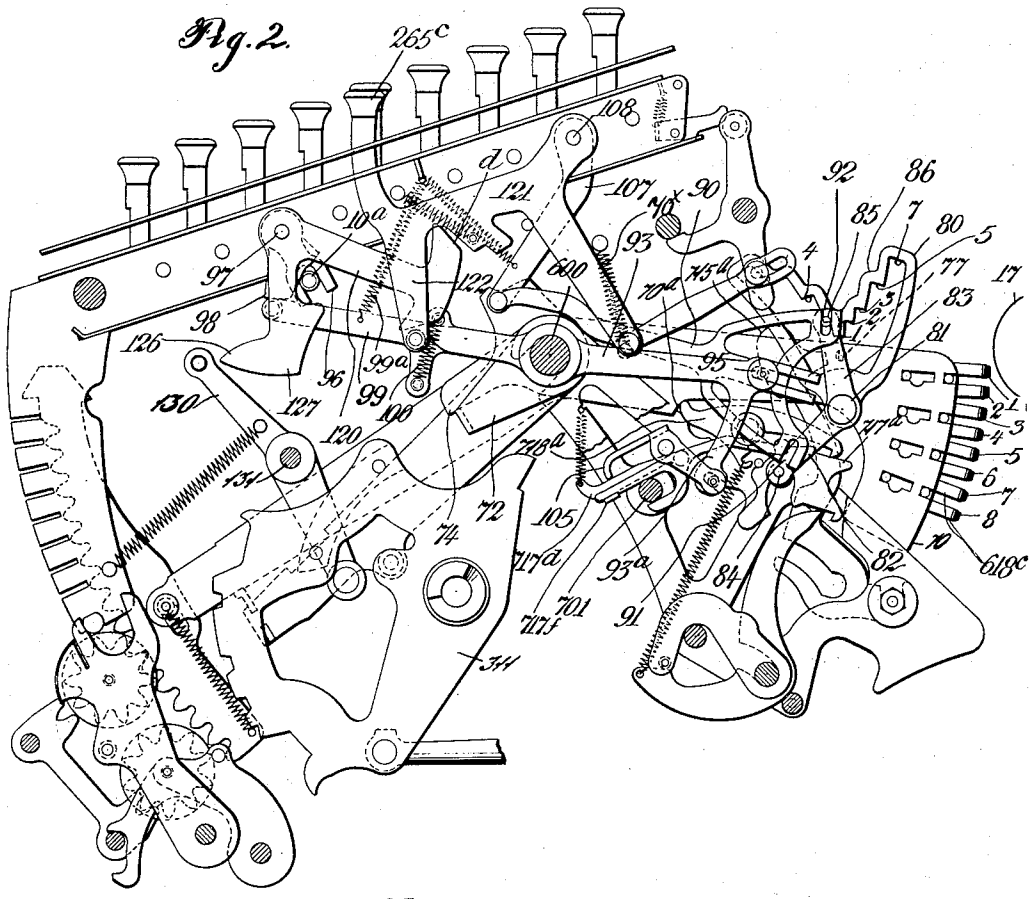
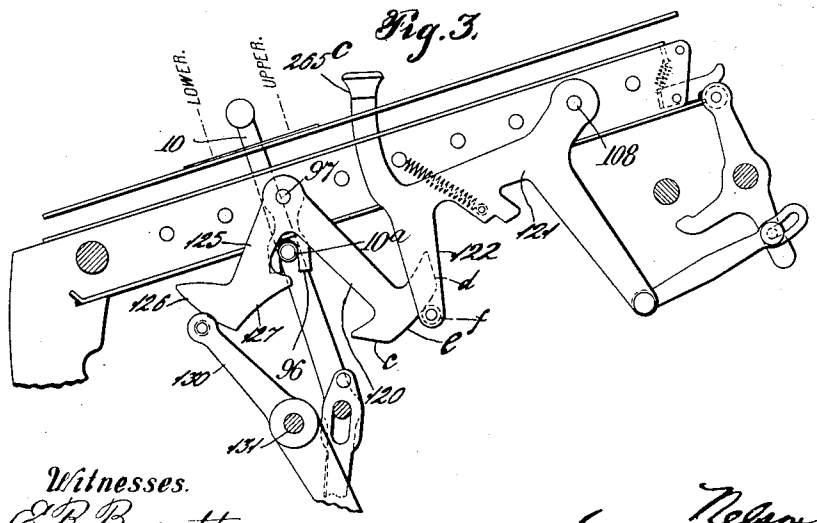


Fig. 3.



Witnesses.

E. R. Barrett

Louis B. Erwin

Inventor.

Nelson White

by Robertson Sturgess Davis

his Attys.

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5 SHEETS—SHEET 3.

Fig. 4.

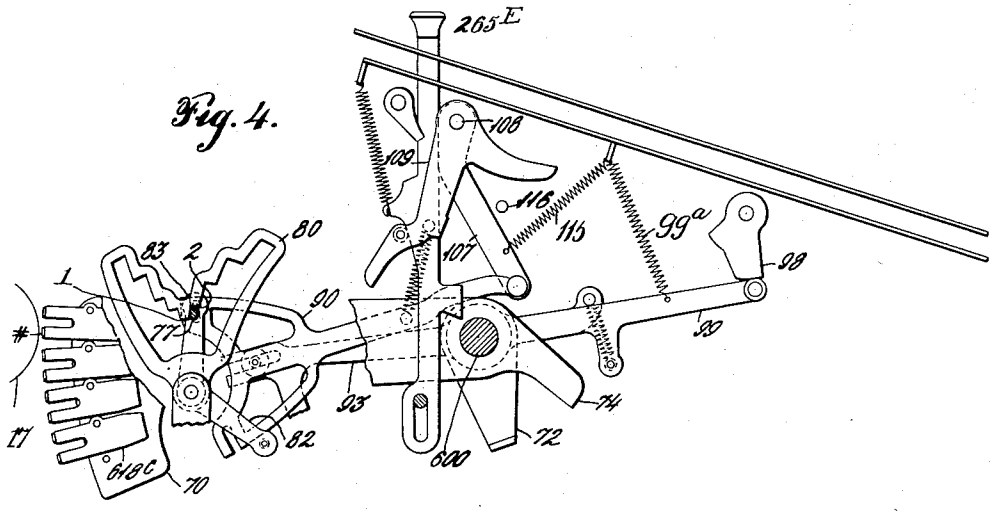


Fig. 5.

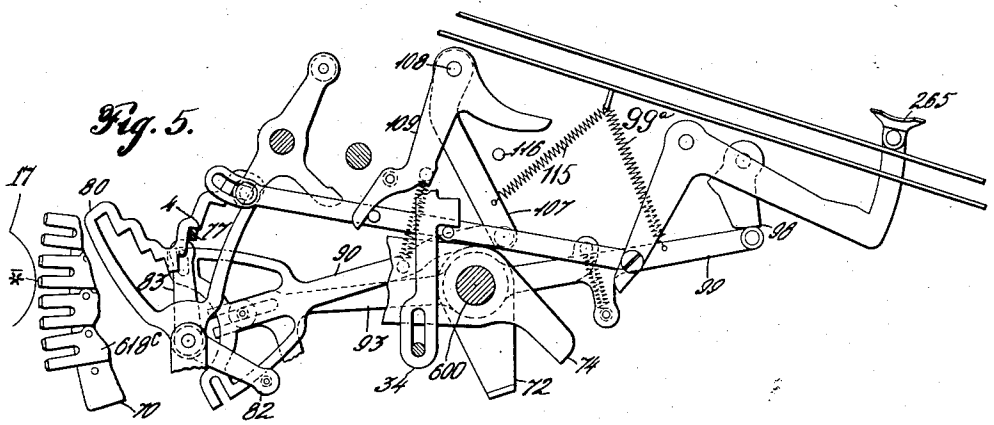
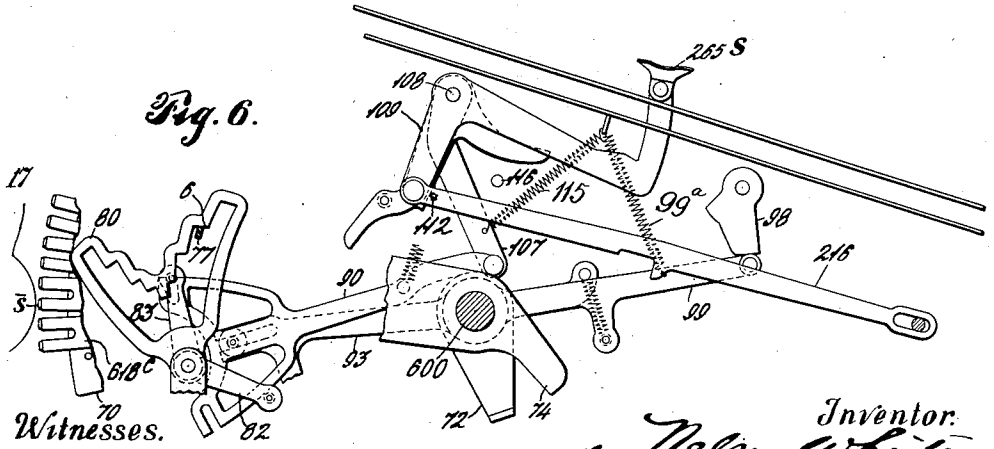


Fig. 6.



Witnesses.

E. R. Barrett

Louis B. Erwin

Inventor:

Nelson White

by Victor J. Evans & Co.

Attys.

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5 SHEETS—SHEET 4.

Fig. 7.

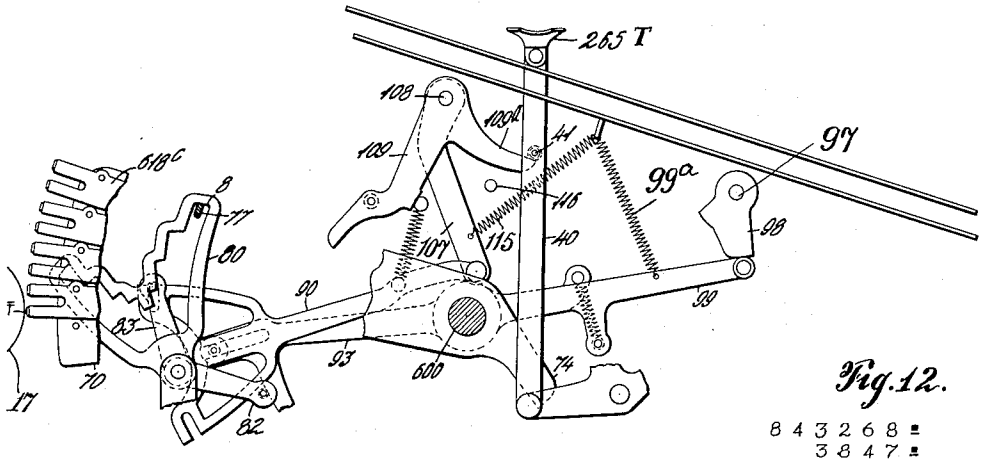
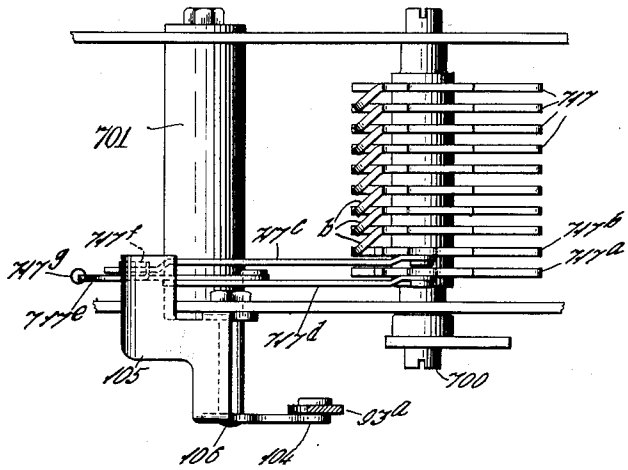


Fig. 12.

8 4 3 2 6 8 ▪
3 8 4 7 ▪
1 4 0 5 9 ▪
8 6 1 1 7 4 I
3 1 6 8
4 4 1 0 0 #
3 2 1 8
8 6 7 5 6 0 §
9 4 2 1
5 5 4 8 7
4 8 9 1
9 3 7 3 5 9 ✱

Fig. 11.



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5 SHEETS—SHEET 5.

Fig. 8.

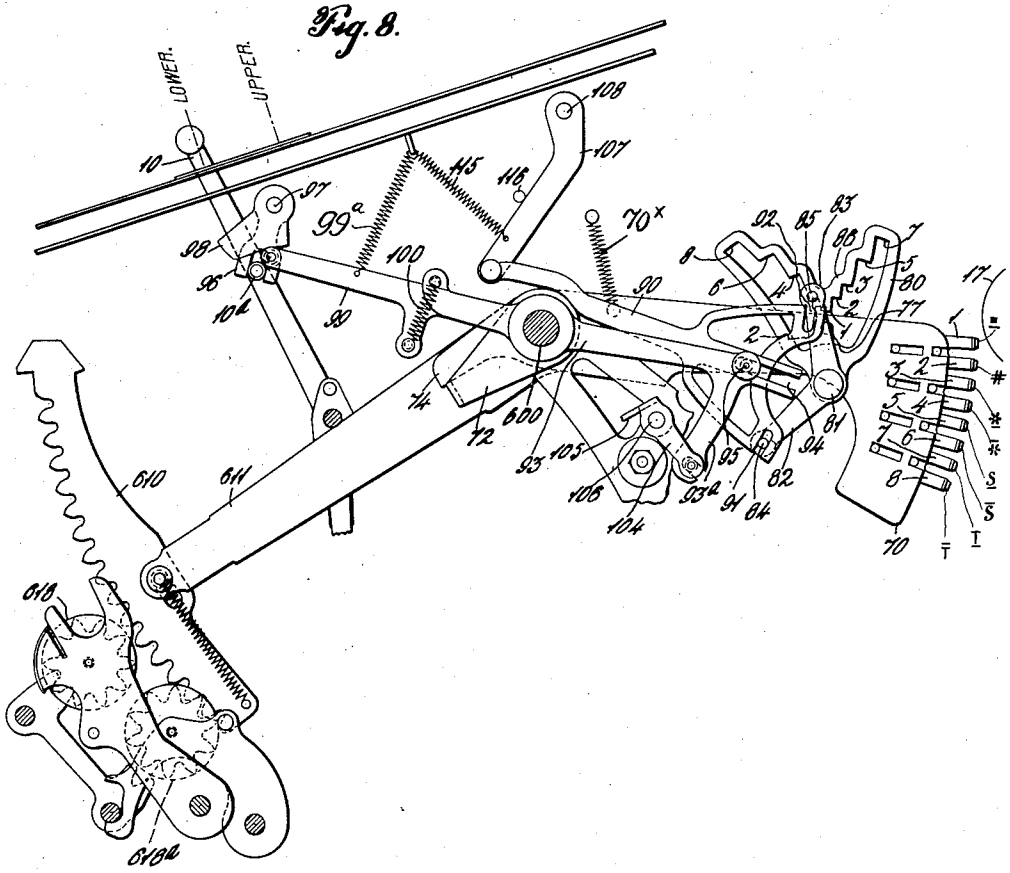


Fig. 9.

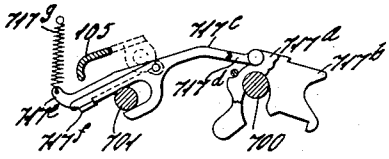
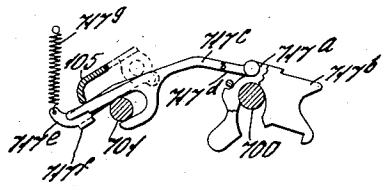


Fig. 10.



Witnesses.

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Louis B. Erwin

Inventor:

Nelson White

by Rector Hibben Davis

his Attys.

UNITED STATES PATENT OFFICE.

NELSON WHITE, OF DETROIT, MICHIGAN, ASSIGNOR TO BURROUGHS ADDING MACHINE COMPANY, OF DETROIT, MICHIGAN, A CORPORATION OF MICHIGAN.

ADDING AND LISTING MACHINE.

1,018,285. Specification of Letters Patent. Patented Feb. 20, 1912.

Application filed May 29, 1909. Serial No. 499,139.

To all whom it may concern:

Be it known that I, NELSON WHITE, a citizen of the United States, residing at Detroit, in the county of Wayne and State of Michigan, have invented certain new and useful Improvements in Adding and Listing Machines, of which the following is a specification.

The present invention relates to that type of adding and listing machine which employs two sets of adding wheels adapted to carry independent accumulations, a total or sub-total of either of which can be struck independently of the other and an accumulation upon either set of which wheels can be transferred to the other set of wheels. Such a machine is disclosed in Patent No. 919,656, issued April 27, 1909, on the joint invention of Jesse G. Vincent and myself, which patent also discloses an arrangement for variously designating different numbers or amounts in the printed list in such manner as to indicate whether or not a number or amount has been accumulated on either set of adding wheels, also in the case of totals and sub-totals which set of wheels was turned to zero for setting up the total or sub-total in question, and further in the case of transferring an accumulation from one set of wheels to the other, indicating from which set of wheels the amount or accumulation in question was transferred.

The present invention relates particularly to this matter of differently designating printed numbers or amounts and one object is to improve upon the arrangement disclosed in said patent by providing a construction better adapted to insure absolute accuracy in the indexing or positioning of a special type carrier which carries different type for designating numbers or amounts. Thus in the arrangement of said patent an indexing or positioning member was employed having a continuous series of stepped shoulders together constituting two sets of stops allotted respectively to the sets of adding wheels and adapted to coöperate with a stop on the type carrier. This construction of indexing or positioning member involved a rather fine graduating or stepping of the stop shoulders, both sets of the latter being in one series, requiring very nice workmanship in order to insure against erratic performance, that is to say failure of the type carrier stop to properly engage with the right stop shoulder on the indexing member. In order to do away with the necessity for putting so much fine work upon the parts the present invention provides for the employment of coarser graduations on the indexing or positioning member, by employing two separate sets of stepped shoulders reversely arranged, instead of the two sets in continuous series of the said patent. In the latter the type carrier stop is shown adjustable, its position depending upon the adjustment of certain controlling devices which predetermine the primarily active set of adding wheels and the arrangement there shown is such as to provide for coöperation of such stop with every other shoulder of the positioning member, the series of such shoulders thus coming into play depending upon the adjustment of the type carrier stop. According to the present invention the type carrier stop is in fixed position thereon and the set of stop shoulders to coöperate therewith is determined not by any adjustment of the type carrier stop but by the direction of movement of the indexing or positioning member, this being of course dependent upon the adjustment of the controlling devices which predetermine the primarily active set of adding wheels.

Another object of the present invention is to provide an improved arrangement whereby the differentiating designation of the amounts in the printed list is carried somewhat further than in the construction of said patent, by the employment of means for distinguishing between amounts added on the two sets of wheels.

With these and incidental objects in view the invention consists in certain novel features of construction and combinations of parts, the essential elements whereof are recited in the appended claims and a preferred form of embodiment of which is described in detail hereinafter and fully illustrated in the accompanying drawings forming a part of this specification.

Of said drawings Figure 1 represents a general left side elevation of an adding and listing machine such as illustrated in said prior patent, with the improvements of the present invention applied thereto, all parts appearing at normal; Fig. 2 is a right side elevation under the same conditions; Fig. 3 shows in similar elevation certain of the

parts illustrated in Fig. 2 under different conditions than as there shown; Figs. 4, 5, 6 and 7 are similar left side elevations with some parts in section, illustrating a series of operations wherein the special type carrier is differently positioned for designating imprints, recording different characters of transaction with reference to the upper one of the two accumulators or sets of adding wheels shown in Figs. 1 and 2; Fig. 8 is a right side elevation with some parts in section, illustrating changed conditions when the lower one of the two accumulators or sets of adding wheels is the primarily active one; Figs. 9 and 10 are detail sectional elevations of certain coupling mechanism employed in connection with detents of the impression-making devices, Fig. 9 illustrating the condition which obtains when the lower accumulator is the primarily active one whereas Fig. 10 illustrates a different condition which obtains when the upper accumulator is the primarily active one; Fig. 11 is a top plan view of the detents or latches of the impression mechanism and the coupling devices of Figs. 9 and 10; and Fig. 12 shows an example of work of which a machine such as here illustrated is capable.

Reference may be had to the aforesaid patent for a full understanding of the details of the mechanism here shown for controlling the two sets of adding wheels or pinions 618 and 618^a and it will be wholly unnecessary to repeat in this specification the full description to be found in said patent, there being no departure from the disclosure therein in the matter of predetermining which set of pinions shall be the primarily active one or in the devices for effecting itemizing, totaling, sub-totaling, elimination or transference of an accumulation from one set of pinions to the other. There is some modification in the form of the three-armed lever 913 (correspondingly designated in said patent) and in the provision of means for reëngaging the pinions and racks after an "elimination" operation, also in the matter of interlocking devices to prevent erratic manipulation, a specific description of which modifications can as well follow description of the new constructions by which the above-specified objects are attained. A special type carrier 70 of the same form as that correspondingly designated in said patent is located to the right of the regular or amount type carriers or levers 611, the latter, as well as said special type carrier, being loosely journaled as usual upon a central rock shaft 600, and the forwardly-extending arms of the levers 611 carrying as usual segmental racks 610 to cooperate with the adding pinions. There is secured to the rock shaft 600 a forwardly-projecting arm 72 with a laterally-turned lip or flange which underlies a forwardly-projecting arm 74 of the special type carrier, and normally said arm 72 acts to hold the rear part of the special type carrier depressed as illustrated in Fig. 8 with its uppermost type below the printing line. Such printing line is in the horizontal plane of the diameter of a roller platen indicated conventionally at 17 and the special type carrier may rise to present any one of its eight type at such printing line. These type are formed upon plates 618^c similar to the regular type plates 618^b but the type faces instead of being formed with numerals are formed to print various characters. Thus the uppermost type 1 prints a small black square with a line under it (■), the next type, designated 2, prints a number sign (#), indicating an unaccumulated amount, the third type, designated 3, prints a star or asterisk with a line under it (⁎) denoting a grand total taken from the lower accumulator, the fourth type, designated 4, prints a star or asterisk with a line over it ($\overline{*}$) indicating a total from the upper accumulator, the fifth type, designated 5, prints the capital letter S with a line under it ($\underline{S}$) indicating a sub-total from the lower accumulator, the sixth type, designated 6, prints the capital letter S with a line over it ($\overline{S}$), indicating a sub-total from the upper accumulator, the seventh type, designated 7, prints the capital letter T with a line under it ($\underline{T}$) indicating an accumulation transferred from the lower accumulator to the upper, and the eighth type, designated 8, prints the capital letter T with a line over it ($\overline{T}$) indicating an accumulation transferred from the upper to the lower accumulator. This arrangement or font of type will be seen to be quite similar to that illustrated in said patent except that the order or arrangement is varied and there is only one type with the number sign and the uppermost type has a different face from any of the special series in the patented construction. This uppermost type is arranged to characterize items or amounts added on the lower set of pinions to distinguish them from items added on the upper set of pinions. In the present arrangement no distinction is made between numbers eliminated from the accumulation, that is as to which particular set of adding pinions happen to be ready for co-action with the racks at the time. It has been found entirely sufficient to merely indicate the elimination of a printed number without identification with one accumulator or the other, such number being of course eliminated from both.

The special type carrier 70 has projecting from the right side a stop pin or stud 77 (Fig. 8) made rectangular in cross section to coöperate with steps or shoulders of an indexing or positioning member 80 secured to a rock shaft 81 journaled in a suitable part

of the supporting framework and carrying also secured rigidly to it integral arms 82 and 83 projecting oppositely to each other and carrying studs 84 and 85 by which to swing the said indexing member one way or the other through instrumentalities hereinafter specified. The said indexing member takes the form of an irregular-shaped frame with side pieces radiating from a central or hub portion and a reëntrant outer side piece 86 of generally V-shaped contour. Short connecting portions between the radiating side pieces and the upper ends of the V-shaped or reëntrant portion form abutments 7 and 8 respectively and the inner edges of the sides of said V-shaped portion, that is the edges confronting the inner edges of the radiating side pieces of this framelike indexing member, are given a stair-step formation providing a series of shoulders or abutments 2, 3, 4, 5 and 6. Where the sides of the V-shaped portion meet there is a shoulder or abutment 1 which bears a similar relation to the other shoulders or abutments that they do to each other. The shoulders 2, 3, 5 and 7 at the right in Fig. 8 and at the left in Figs. 4 to 7, constitute one series of stops for co-action with the pin or stud 77, and the shoulders 2, 4, 6 and 8 at the left in Fig. 8 and at the right in Figs. 4 to 7 constitute another set of stops for coöperation with said pin or stud, whereas the abutment or shoulder 1 may be considered a stop common to the two sets or series. Normally this shoulder or abutment 1 stands directly over said pin or stud as illustrated in Fig. 8, and when at the outset of an operation of the machine the arm 72 swings down and rearward the special type carrier 70 is swung up by its spring 70^x until the pin or stud 77 strikes said shoulder 1. This movement of the type carrier is just sufficient to bring its type, designated 1, to the printing line, but printing from that type will not take place unless the lever 10, which corresponds with that similarly designated in said patent, is in the position for permitting accumulation of amounts in the lower set of wheels 618^a, as shown in Fig. 8. The controlling connections from said lever will be specified hereinafter. It will be obvious that by rocking the said member 80 more or less forward or backward any one of the shoulders 2, 3, 4, 5, 6, 7 or 8 can be brought into the arc of movement of the stud or pin 77 and act as stops to variously position the special type carrier. These shoulders have been designated by numerals corresponding with those applied to the type of the special type carrier so as to indicate which shoulder or shoulders position said carrier to bring which type to the printing line. Thus it will be noted that either of the shoulders designated 2 stop the type carrier with the elimination sign type 2 at the printing line. It will be noted, however, that the shoulder designated 3 is spaced from the right-hand shoulder 2 (Fig. 8) half the distance that the left-hand shoulder 4 is spaced from the left-hand shoulder 2. This shoulder 3 is designed to stop the type carrier with the lower accumulator total type 3 at the printing line, whereas the shoulder 4 is designed to permit the type carrier to move enough farther to present at the printing line the upper accumulator total type 4. Then the shoulder 5 is so related to the shoulder 3 as to provide for movement of the type carrier just far enough to present at the printing line the lower accumulator sub-total type 5. The shoulder 6 permits further upward movement of the type carrier 3 to present at the printing line the upper accumulator sub-total type 6. The shoulder or abutment 7 provides for movement of the type carrier to position where it presents at the printing line the lower accumulator transfer type 7 and the shoulder or abutment 8 provides for movement of the carrier enough farther to present at the printing line the upper accumulator transfer type 8. The direction in which the said indexing member 80 rocks will be determined by the position of the lever 10. When the latter is forward as in Fig. 8, making the lower set of adding pinions the primarily active one, any rocking of the indexing member to bring another than the shoulder 1 in line with the stud 77, will be in a forward direction or to the left as the parts are viewed in Fig. 8. On the other hand with the lever in the position shown in Figs. 1 and 4 to 7, making the upper set of adding pinions the primarily active one, any rocking of the said indexing member to bring another than the shoulder 1 over the stud 77, will be in a rearward direction. Here it may be said that the right-hand series of shoulders 2, 3, 5 and 7 as the parts are viewed in Fig. 8 is allotted to the lower accumulator and that the left-hand series of shoulders 2, 4, 6 and 8 is allotted to the upper accumulator, all of the shoulders being stepped or graduated with relation to each other except the shoulders 2 so as to provide for variously positioning the type carrier according to which accumulator is primarily active and according to the character of the transaction in hand.

The means for determining the direction in which the indexing member shall rock comprise, in combination with the before-mentioned arms 82, 83 and studs 84, 85, a pitman 90 made in the form of a generally triangular frame at its rear end and slotted at opposite sides thereof as shown at 91 and 92 to engage respectively said studs 84 and 85; and a lever 93 loose on the shaft 600 and slotted at its rear end as shown at 94 to embrace a pin or stud 95 on said pitman. By vibrating said lever 93 the pitman may be caused to engage either the stud 84

or the stud 85. When engaged with the former, rearward thrust of the pitman will obviously rock the indexing member 80 forward, whereas when engaged with the stud 85 as in Figs. 4 to 7, rearward thrust of the pitman will rock said member rearward. The lever 93 is controlled by the lever 10, the latter having a roller stud 10^a engaging a bifurcated arm 96 secured to a rock shaft 97 which extends cross-wise of the machine under the keyboard and carries at its right-hand end a cam 98 engaging the forward end of an arm 99 loose on the shaft 600 and held by a spring 99^a against said cam and connected by a spring 100 with the forwardly-projecting arm of the lever 93, all as clearly shown in Fig. 8. The spring 99^a acts when the lever 10 is thrown forward to lower the pitman 90 engaging the slot 91 with the stud 84 as shown in Fig. 8. When the said lever 10 is thrown rearwardly to the upper accumulator position illustrated in Figs. 4 to 7 the roller stud 10^a rocks the arms 96 and the cam 98 causing the latter to depress the arm 99, which, through the medium of the spring 100, rocks the lever 93, swinging the pitman 90 up and engaging its slot 92 with the stud 85 as shown in Figs. 4 to 7. Said spring 100 normally holds the stud 93^x on lever 93 and the upper edge of said arm 99 in contact and ordinarily said lever and arm move in unison. The purpose of the spring is to protect the parts from strain should the lever 10 be thrown rearward, causing the cam 98 to depress the arm 99, at a time when the stud 85 is not in registry with the slot 92. With the lever 10 in either position the shoulder 1 of the indexing member normally stands directly over the stud or pin 77 of the special type carrier as shown in Fig. 8 so that when the machine is operated without the depression of any keys or with the depression of amounts keys only, the special type carrier rises to a position where its type 1 is brought to the printing line. With the machine adjusted as illustrated in Fig. 8 the type plate 618^c having said type 1 will be driven against the platen if the machine is operated with amount keys only depressed. In other words whenever an amount is accumulated on the lower set of adding wheels the special character will appear in connection with it as at the beginning of the list shown in Fig. 12. This is brought about through the operation of a special hammer 715^a mounted similarly to and located alongside of the regular hammers 715 to the right of the latter (see Fig. 2), such extra or special hammer being spring-actuated as is common in machines of this type and normally restrained by a latch 717^a as are all the other hammers by the customary latches 717. The latter are as usual formed with overlapping tails *b* (Fig. 11) to provide for successive tripping so that ciphers will be automatically filled in. The latch 717^a is not overlapped by a tail of the adjacent latch, however, but the latter, designated 717^b, while overlapped by the tail *b* of the next adjacent latch does not itself have any such tail. It is, however, equipped for transferring movement to the latch 717^a so as to produce the same effect as though it were equipped with such overlapping tail, but the connecting means is of a character to provide for disconnection. Such means comprise a thrust bar or pitman 717^c pivoted at its rear end to the latch 717^b (Figs. 9, 10 and 11) and bifurcated at its forward end to embrace a guide rod 701, and a similar device 717^d pivoted at its rear end to the latch 717^a and bifurcated at its forward end to embrace said rod 701 and having pivotally mounted upon it a coupler piece 717^e. The latter has a laterally-turned lip or flange 717^f normally held by a spring 717^g engaged with a shoulder of the thrust bar or pitman 717^c as shown in Fig. 9. It will thus be seen that lifting of the latch 717^b, which involves its rocking on the supporting journal rod 700, causes the bar or pitman 717^c to be thrust forward carrying with it the bar or pitman 717^d which correspondingly rocks the latch 717^a, thus releasing the extra hammer 715^a so that it will operate upon the type plate 618^a having the type 1. Of course it will be understood that any amount set up on the keyboard will necessarily require tripping of the units latch 717^b in an operation of the machine and consequently any operation of the machine which adds an item or amount on the lower set of pinions will effect the characterizing of such amount by the symbol of the type 1. Now in the case of accumulating on the upper set of pinions said type 1 should not be operated notwithstanding it is brought to the printing line. To prevent its operation the coupling between the latches 717^b and 717^a is disabled as an incident to adjustment of the lever 10 in the upper accumulator position. It has before been explained that throwing the lever to such position rocks the lever 93 raising its rear arm. Said lever has a downwardly-projecting branch 93^a (Fig. 8) which at its lower end is pivotally connected to an arm 104 of a rocking blade 105 adapted to act upon the coupler piece 717^e and disengage it from the thrust bar or pitman 717^d as illustrated in Fig. 10. The numeral 106 designates the pivot stud of said rocking blade (see particularly Fig. 11) and the arm 104 projects rearwardly of said stud whereas the blade is on the forward side of the same. Consequently, with the rear arm of the lever 93 lowered the blade

is raised and said coupler piece left free to be held in engagement with said thrust bar 717c by the spring 717g. But when the lever 93 swings up the blade necessarily rocks forward and down and its flanged forward end strikes the coupler piece and moves it on its pivot in opposition to the spring 717g carrying the lip 717f out of line with the shoulder or thrust bar 717c. Consequently, when in adding an amount on the upper set of pinions the latch 717b rocks, the accompanying forward movement of said thrust bar 717c has no effect upon the latch 717a and the hammer 715a remains restrained.

The extent of rocking of the indexing or positioning member 80 either forward or back through the medium of the pitman 90, is regulated by certain special keys similar to those illustrated in the aforesaid patent, such keys being termed total key, sub-total key, transfer key and eliminating key and designated respectively 265, 265S, 265T and 265E (Fig. 1). The said pitman 90 is pivotally connected at its forward end to an arm 107 secured to and depending from a rock shaft 108 (Fig. 8) extending across the machine under the keyboard and carrying at its left-hand end (Fig. 1) an irregular-shaped arm 109, the latter adapted to be swung varying distances by depression of the above-mentioned special keys. Thus the elimination key, mounted upon the upper end of a vertically-sliding stem 34, has a cam rise 34e acting upon a roller stud 34d on the middle part of a rearwardly-projecting extension of the depending branch of the arm 109. The movement imparted to the latter by depression of elimination key is such as to thrust the pitman 90 rearward far enough to bring one or the other of the shoulders 2 in the arc of movement of the stud 77 on the special carrier, in consequence of which in an operation of the machine said carrier will move far enough to present at the printing line the number sign type 2. Now the before-mentioned special latch 717a besides being releasable through coöperation with the other latches 717 and 717b is individually releasable by a pawl 718a which is exactly like the regular pawls 718 (Fig. 1) which individually release the other latches and as those other pawls are adapted to be displaced through coöperation between their upturned forward ends and inclined shoulders of the type carriers 611 so is the pawl 718a adapted to be displaced through cooperation between its upturned forward end and a similar shoulder 70a of the special type carrier. Furthermore, as the regular or amount type carriers 611 are required to advance or rise beyond positions where their first or cipher types are brought to the printing line before their inclined shoulders leave the paths of movement of the pawls, so the special type carrier must move beyond the position where its first type is at the printing line before the pawl 718a can swing forward without being disabled by the inclined shoulder 70a. Consequently, this pawl 718a cannot release the special hammer when amounts are being accumulated on the upper set of pinions. However, the pawl will operate to release the latch when a number has been set up on the keyboard and the elimination key depressed because then the special type carrier moves to the second position, the pawl 718a will not be so disabled. This would be the case with the lever 10 in either the upper or the lower accumulator position though the effectiveness of the pawl 718a is only of importance in connection with the upper accumulator adjustment since under the lower accumulator adjustment the latch 717a would be tripped by the adjacent latch 717b. Fig. 4 illustrates the effect of depressing the elimination key and operating the machine with the lever 10 in the upper accumulator position and it will be noted that the stop pin or stud 77 is against the stop shoulder 2 of the forward set. Now in the case of operating with the total key 265 depressed under this same adjustment, a stud 110 on the familiar total key link 226 (Fig. 1) acts against the lower part of the extension of the depending branch of the arm 109 swinging said arm farther than does the cam rise 34e and consequently rocking the pitman 90 a step farther rearward and bringing the shoulder 4 (Fig. 5) into line with the stop stud 77 so that upon operation of the machine the special type carrier will rise to a position where its fourth type 4 is at the printing line. If the lever 10 had been at the lower accumulator adjustment it will be understood that the indexing member 80 would then have been rocked forward instead of rearward with the result that the shoulder 3 would have been brought into line with the stud 77 in consequence of which the special type carrier would not have moved up so far but only to the third position with the total type 3 allotted to the lower accumulator at the printing line. Depression of the sub-total key 265S causes a stud 112 on its link 216 to act against a shoulder on the depending branch of the arm 109 as shown in Fig. 6 swinging said arm still farther rearward and thus thrusting the pitman 90 a step farther and in the case of an upper accumulator adjustment bringing into line with the stop pin 77 the shoulder 6. This results in positioning the special type carrier at the sixth position or with the type 6 at the printing line, which type has the character denoting a sub-total taken from the upper accumulator. If the lever 10 had been at the lower accumulator position then of course the indexing member would have rocked forward and the shoul-

der 5 would have been brought into line with the stud 77 and the special type carrier would only have moved to the fifth position presenting at the printing line the type 5 having the character denoting a sub-total taken from the lower accumulator. The key 265T corresponds with the key similarly designated in said patent, which key controls the transfer of accumulations between the two sets of pinions. Said key surmounts a vertically-movable stem 40 (Fig. 1) having a stud 41 standing over the forwardly-projecting branch 109[a] of said arm 109. Depression of the key 265T through the action of its said stud upon said branch of the arm 109 rocks the latter a step farther rearward thereby thrusting the pitman 90 correspondingly farther rearward and so rocking the member 80 farther rearward or forward according to whether the adjustment is an upper or lower accumulator 1. Fig. 7 illustrates the operation when the lever 10 is adjusted to the upper accumulator position and it will be noted that the stud 77 has come into contact with the shoulder 8 so that the special type carrier is moved to its eighth or final position presenting at the printing line the type 8 having a character to indicate transfer of an accumulation from the upper to the lower set of wheels. If the lever 10 had been at the lower accumulator position then the shoulder 7 would have been brought into line with the stud 77 and the type carrier would have been stopped at the seventh position with the type at the printing line having the character denoting transfer of an accumulation from the lower to the upper set of wheels.

Of course it will be understood that at the conclusion of any operation of the machine when any one of the above-mentioned special keys has been depressed, such key will be released and the special type carrier restored to normal position. At the same time a spring 115 applied to the arm 107 draws the same back against a fixed stop 116 and thus restores the indexing member 80 to normal middle position such as shown in Fig. 8.

It will be seen that the above-described construction is well adapted to thoroughly fulfil the objects explained at the outset though of course it is to be understood that such construction is susceptible of modification without necessarily departing from the spirit and scope of the invention.

In a machine of the above character it is of course desirable that when the adjustment of the lever 10 is changed the keyboard throughout shall be at normal, otherwise confusion or misoperation might result. Consequently, provision is made in the present instance for release of any depressed amount keys as an incident to any change in the adjustment of the lever 10 from either position to the other. To this end an arm 120 is affixed to the rock shaft 97 (see Figs. 2 and 3), which arm at its lower end is widened and formed with oppositely-inclined cam edges *c* and *d* retreating from a terminal edge *e* of the arm struck on the axis of the shaft 97. This arm 120 is adapted to act upon the so-called correction key 265C, the latter surmounting a pivoted arm 121 having a downwardly-extending branch 122 carrying a roller stud *f*. Under either adjustment of the lever 10 one or the other of the inclined edges *c* or *d* stands ready to act upon said stud *f* and depress the correction key, thereby releasing any depressed amount keys. Fig. 2 illustrates the normal condition under an upper accumulator adjustment and it will be seen that the inclined edge *c* will, upon movement of said lever 10 to the lower accumulator position, so act upon said stud *f* as illustrated in Fig. 3. It will be equally obvious that when the lever 10 is moved all the way to the lower accumulator position the inclined edge *d* will have passed the roller stud *f* permitting the correction key to rise but will stand ready to again depress said key when the lever is moved back to the upper accumulator position. Provision is also made for preventing depression of total, sub-total or transfer key unless the lever 10 is fully moved to one or the other of its final positions and these same provisions prevent throwing said lever 10 while any one of the above-mentioned keys is partly depressed.

The before-mentioned arm 120 has formed integral with it another arm 125 (Figs 2 and 3) which has a tapering projection 126 at its lower end with rounded edges, and a widened portion 127 in rear of said tapered projection and formed with a lower curved edge.

The numeral 130 designates a bail secured to a rock shaft 131 which at the left-hand end has secured to it an arm 132, the latter connected by a link 133 (Fig. 1) with the total key bell crank 227. It will be understood that depression of the sub-total or transfer keys rocks said bell crank 227 as well as does depression of the total key itself and consequently depression of any one of these keys must be accompanied by a rearward swinging of the bail 130. Normally the arm 125 does not interfere with this but during swinging of the lever 10 in either direction the lower curved edge of the tapered projection 126 passes along above the cross rod of the bail blocking it and thus preventing operation of any one of said keys until the lever has moved to the full extent. In the case of depression of any one of said keys with the lever 10 in the lower accumulator position the cross rod of the bail swings along under the

curved edge of the widened part 127 of the arm 125 whereas with the lever 10 in the upper accumulator position said bail cross rod swings over the upper curved edge of the tapering projection 126. It follows that during the swing of the bail the lever 10 cannot be shifted and furthermore said bail must return to normal before the lever can be changed from one position to the other.

It will be understood that in adding machines of the above-described type as well as machines employing a single accumulator the racks will be out of engagement with the pinions at the conclusion of a totaling or an eliminating operation unless special means are provided for returning the pinions to engagement with the racks. It has been common heretofore to equip the familiar full-stroke sector 311 with a stud for operating upon a cam edge of the right-hand side piece of the accumulator frame below the pivot thereof, as shown for example in the patent to Swalm No. 885,202, issued April 21, 1908, to which reference is made in the aforesaid patent to Vincent and myself. In the case of a total such means as above specified is unimportant because there will be no occasion for immediately repeating an operation of the machine with the total or sub-total key depressed and in the case of an itemizing operation immediately following the pinions should be out of mesh with the racks anyway during the descent of the latter and would of course be drawn into engagement with the racks by one or the other of the pitmen as the handle of the machine started rearward. However, as to an eliminating operation this might be followed by a totaling or sub-totaling operation when one set of pinions or the other should be engaged with the racks while the latter descend. It will be understood that at the conclusion of an eliminating operation the active pitman is left thrust forward unless special means are provided for returning it to normal. This is so because the wipe pawl 821 has been disabled in its rearward position so that it cannot act to rock the lever 913 and draw the pitman back. In the present instance instead of employing the familiar means before specified for rocking the accumulator frame or frames and in this manner reëngaging the pinions with the racks at the conclusion of an eliminating operation, thereby thrusting the pitman rearward or to normal position, means are applied directly to the three-armed lever 913 and the rearwardly-extending arm of the latter as shown in Fig. 1 has a depending link 913^a pivotally connected to it and said link at its lower end has an arc-shaped slot 913^b which embraces a stud 813^a on a branch of the arm 813 which carries the wipe pawl 821. The result of this arrangement is that in an eliminating operation when the arm 813 approaches the end of its forward swing accompanying the backward swing of the operating handle, the stud 813^a acting against the upper end of the slot 913^b thrusts the link 913^a upward rocking the lever 913 and thus drawing the active pitman back to normal position, carrying with it the accumulator frame which had at the outset of the operation been rocked forward.

The pivoted retaining arm 914^c shown in the aforesaid patent to Vincent and myself is not employed in the present construction but the depending arm of the lever 913 has a forwardly and downwardly-projecting extension shouldered in its lower side to abut a stud 913^c for limiting the rocking movement of said lever 913.

What I claim is:

1. In a machine of the character described, the combination of printing and accumulating mechanism comprising two sets of adding wheels and type carriers common thereto; controlling actuators for the wheels; devices for determining which set of wheels shall be active; a special type for designating items printed incidental to accumulation of corresponding amounts on one set of wheels; impression means cooperating with said special type; and means for disabling said impression means when the other set of wheels is accumulating amounts.

2. In a machine of the character described, the combination of printing and accumulating mechanism comprising two sets of adding wheels and type carriers common thereto; controlling actuators for the wheels; devices for determining which set of wheels shall be active; a special type for designating items printed incidental to accumulation of corresponding amounts on one set of wheels; a spring-actuated impression hammer for said special type; a detent normally restraining said hammer; means for displacing said detent when accumulating amounts on said one set of wheels; and means for disabling said displacing means when accumulating amounts on the other set of wheels.

3. In a machine of the character described, the combination of printing and accumulating mechanism comprising two sets of adding wheels, amount type carriers common thereto, and spring-actuated impression hammers for the type carriers respectively; coöperatively related detents for said hammers; actuators for the wheels; controlling devices for determining which set of adding wheels shall be active; a special type for designating items printed incidental to accumulation of corresponding amounts on one set of wheels; a spring-actuated impression hammer for said special type; a detent

for said hammer coöperatively related to the first mentioned detents; and means for suspending such coöperative relationship when accumulating amounts on the other set of wheels.

4. In a machine of the character described, the combination of printing and accumulating mechanism comprising two sets of adding wheels, amount type carriers common thereto, and spring-actuated impression hammers for the type carriers respectively; coöperatively related detents for said hammers; actuators for the wheels; controlling devices for determining which set of adding wheels shall be active; a special type for designating items printed incidental to accumulation of corresponding amounts on one set of wheels; a spring-actuated impression hammer for said special type; a detent for said hammer; a coupler between said detent and the adjacent detent of those first mentioned; and means for disabling said coupler when accumulating amounts on the other set of wheels.

5. In a machine of the character described, the combination of printing and accumulating mechanism comprising two sets of adding wheels, amount type carriers common thereto, and spring-actuated impression hammers for the type carriers respectively; coöperatively related detents for said hammers; actuators for the wheels; controlling devices for determining which set of adding wheels shall be active, including a manipulative lever; a special type for designating items printed incidental to accumulation of corresponding amounts on one set of wheels; a spring-actuated impression hammer for said special type; a detent for said hammer; and a coupler between said detent and the adjacent detent of those first mentioned, said coupler controlled by the aforesaid manipulative lever.

6. In a machine of the character described, the combination with printing and accumulating mechanism including two sets of adding wheels, actuators therefor, and means for controlling said mechanism to determine which set of wheels shall be operated upon; of a movable special type carrier for characterizing different transactions and having a positioning stop; and an indexing member having two sets of stops to coöperate with the latter, said member being varyingly movable to present a stop of one set or the other to the special type carrier stop, under control of said means for determining the active set of adding wheels.

7. In a machine of the character described, the combination with printing and accumulating mechanism including two sets of adding wheels, actuators therefor, and means for controlling said mechanism to determine which set of wheels shall be operated upon; of a movable special type carrier for characterizing different transactions and having a positioning stop; and an indexing member having two sets of stops to coöperate with the latter, said member being reversely movable to present a stop of one set or the other to the special type carrier stop, under control of said means for determining the active set of adding wheels.

8. In a machine of the character described, the combination with printing and accumulating mechanism including two sets of adding wheels, actuators therefor, and means for controlling said mechanism to determine which set of wheels shall be operated upon; of a movable special type carrier for characterizing different transactions and having a positioning stop; and an indexing member having two reversely arranged graduated sets of stops to coöperate with the latter, said member being varyingly movable to present a stop of one set or the other to the special type carrier stop, under control of said means for determining the active set of adding wheels.

9. In a machine of the character described, the combination with printing and accumulating mechanism including two sets of adding wheels, actuators therefor, and means for controlling said mechanism to determine which set of wheels shall be operated upon; of a movable special type carrier for characterizing different transactions and having a positioning stop; and an indexing member having two sets of stepped stops to coöperate with the latter, said member being varyingly movable to present a stop of one set or the other to the special type carrier stop, under control of said means for determining the active set of adding wheels.

10. In a machine of the character described, the combination with printing and accumulating mechanism including two sets of adding wheels, actuators therefor, and means for controlling said mechanism to determine which set of wheels shall be operated upon; of a movable special type carrier for characterizing different transactions and having a positioning stop; and an indexing member having two reversely arranged graduated sets of stepped stops to coöperate with the latter, said member being varyingly movable to present a stop of one set or the other to the special type carrier stop, under control of said means for determining the active set of adding wheels.

11. In a machine of the character described, the combination with printing and accumulating mechanism including two sets of adding wheels, actuators therefor, and means for controlling said mechanism to determine which set of wheels shall be operated upon; of a movable special type carrier for characterizing different transactions and having a positioning stop; and an indexing member mounted to rock and having two reversely

arranged sets of stops to coöperate with the latter; and means for controlling the direction of movement of said member by the means for determining the active set of adding wheels.

12. In a machine of the character described, the combination with printing and accumulating mechanism including two sets of adding wheels, actuators therefor, and means for controlling said mechanism to determine which set of wheels shall be operated upon; of a movable special type carrier for characterizing different transactions and having a positioning stop; an indexing member mounted to rock and having two reversely arranged sets of stepped stops to coöperate with the latter; means for controlling the direction of movement of said member for determining the active set of adding wheels, and means for varying the extent of movement of the member according to the transaction in hand.

13. In a machine of the character described, the combination with printing and accumulating mechanism including two sets of adding wheels, actuators therefor, and means for controlling said mechanism to determine which set of wheels shall be operated upon; of a movable special type carrier for characterizing different transactions and having a positioning stop; an indexing member mounted to rock and having two reversely arranged sets of stops to coöperate with the latter; a pitman engageable with and disengageable from said member on opposite side of its rocking center; and means for controlling the engagement and disengagement by the means for determining the active set of adding wheels.

14. In a machine of the character described, the combination with printing and accumulating mechanism including two sets of adding wheels, actuators therefor, and means for controlling said mechanism to determine which set of wheels shall be operated upon; of a movable special type carrier for characterizing different transactions and having a positioning stop; and an indexing member mounted to rock and having two reversely arranged sets of stepped stops to coöperate with the latter; a pitman engageable with and disengageable from said member on opposite side of its rocking center; means for controlling the engagement and disengagement by the means for determining the active set of adding wheels; and means for varying the stroke of the pitman according to the character of the transaction in hand.

15. In a machine of the character described, the combination with printing and accumulating mechanism including two sets of adding wheels, actuators therefor, and means for controlling said mechanism to determine which set of wheels shall be operated upon, said means including a manipulative lever; of a movable special type carrier for characterizing different transactions and having a positioning stop; and an indexing member mounted to rock and having two reversely arranged sets of stepped stops to coöperate with the latter; a pitman engageable with and disengageable from said member on opposite side of its rocking center; and a lever engaged with said pitman and vibrated by the aforesaid manipulative lever.

16. In a machine of the character described, the combination with printing and accumulating mechanism including two sets of adding wheels, actuators therefor, and means for controlling said mechanism to determine which set of wheels shall be operated upon, said means including a manipulative lever; of a movable special type carrier for characterizing different transactions and having a positioning stop; and an indexing member mounted to rock and having two reversely arranged sets of stepped stops to coöperate with the latter; a pitman engageable with and disengageable from said member on opposite side of its rocking center; a spring tending to engage it therewith on one side of such center; and means operated by the aforesaid manipulative lever to shift the pitman disengaging it on such side and engaging it on the opposite side of said member's rocking center.

17. In a machine of the character described, the combination with printing and accumulating mechanism including two sets of adding wheels, actuators therefor, and means for controlling said mechanism to determine which set of wheels shall be operated upon, said means including a manipulative lever; of a movable special type carrier for characterizing different transactions and having a positioning stop; and an indexing member mounted to rock and having two reversely arranged sets of stepped stops to coöperate with the latter; a pitman engageable with and disengageable from said member on opposite side of its rocking center; a spring tending to engage it therewith on one side of such center; a lever engaged with said pitman and means for operating such lever by the aforesaid manipulative lever to shift the pitman in opposition to said spring.

18. In a machine of the character described, the combination with printing and accumulating mechanism including two sets of adding wheels, actuators therefor, and means for controlling said mechanism to determine which set of wheels shall be operated upon, said means including a manipulative lever; of a movable special type carrier for characterizing different transactions and having a positioning stop; and an indexing member mounted to rock and hav-

ing two reversely arranged sets of stepped stops to coöperate with the latter; a pitman engageable with and disengageable from said member on opposite side of its rocking center; a spring tending to engage it therewith on one side of such center; a lever engaged with said pitman, and a rocking cam for throwing such lever, said cam operated by the aforesaid manipulative lever.

19. In a machine of the character described, the combination with printing and accumulating mechanism including two sets of adding wheels, actuators therefor, and means for controlling said mechanism to determine which set of wheels shall be operated upon; of a special type carrier mounted to swing and having a segmental series of type and spring-drawn to successively present the latter at the printing line said carrier having a positioning stop; a vibratory actuator normally retracting said carrier to withhold its type from printing position; and an indexing member having two sets of stops to coöperate with the carrier stop, said member being varyingly movable to present a stop of one set or the other to the special type carrier stop, under control of said means for determining the active set of adding wheels.

20. In a machine of the character described, the combination with printing and accumulating mechanism including two sets of adding wheels, actuators therefor, and means for controlling said mechanism to determine which set of wheels shall be operated upon; of a special type carrier mounted to swing and having a segmental series of type and spring-drawn to successively present the latter at the printing line said carrier having a positioning stop; a vibratory actuator normally retracting said carrier to withhold its type from printing position; and an indexing member having two sets of stops to coöperate with the carrier stop, said member being reversely movable to present a stop of one set or the other to the special type carrier stop, under control of said means for determining the active set of adding wheels.

21. In a machine of the character described, the combination with printing and accumulating mechanism including two sets of adding wheels, actuators therefor, and means for controlling said mechanism to determine which set of wheels shall be operated upon; of a special type carrier mounted to swing and having a segmental series of type and spring-drawn to successively present the latter at the printing line said carrier having a positioning stop; a vibratory actuator normally retracting said carrier to withhold its type from printing position; and an indexing member having two reversely arranged graduated sets of stops to coöperate with the carrier stop, said member being varyingly movable to present a stop of one set or the other to the special type carrier stop, under control of said means for determining the active set of adding wheels.

22. In a machine of the character described, the combination with printing and accumulating mechanism including two sets of adding wheels, actuators therefor, and means for controlling said mechanism to determine which set of wheels shall be operated upon; of a special type carrier mounted to swing and having a segmental series of type and spring-drawn to successively present the latter at the printing line said carrier having a positioning stop; a vibratory actuator normally retracting said carrier to withhold its type from printing position; and an indexing member having two sets of stepped stops to coöperate with the carrier stop, said member being varyingly movable to present a stop of one set or the other to the special type carrier stop, under control of said means for determining the active set of adding wheels.

23. In a machine of the character described, the combination with printing and accumulating mechanism including two sets of adding wheels, actuators therefor, and means for controlling said mechanism to determine which set of wheels shall be operated upon; of a special type carrier mounted to swing and having a segmental series of type and spring-drawn to successively present the latter at the printing line said carrier having a positioning stop; a vibratory actuator normally retracting said carrier to withhold its type from printing position; and an indexing member having two reversely arranged graduated sets of stepped stops to coöperate with the carrier stop, said member being varyingly movable to present a stop of one set or the other to the special type carrier stop, under control of said means determining the active set of adding wheels.

24. In a machine of the character described, the combination with printing and accumulating mechanism including two sets of adding wheels, actuators therefor, and means for controlling said mechanism to determine which set of wheels shall be operated upon; of a special type carrier mounted to swing and having a segmental series of type and spring-drawn to successively present the latter at the printing line said carrier having a positioning stop; a vibratory actuator normally retracting said carrier to withold its type from printing position; an indexing member mounted to rock and having two reversely arranged sets of stops to coöperate with that of the carrier; and means for controlling the direction of movement of said member by the

means for determining the active set of adding wheels.

25. In a machine of the character described, the combination with printing and accumulating mechanism including two sets of adding wheels, actuators therefor, and means for controlling said mechanism to determine which set of wheels shall be operated upon; of a special type carrier mounted to swing and having a segmental series of type and spring-drawn to successively present the latter at the printing line said carrier having a positioning stop; a vibratory actuator normally retracting said carrier to withhold its type from printing position; an indexing member mounted to rock and having two reversely arranged sets of stepped stops to coöperate with that of the carrier; means for controlling the direction of movement of said member by the means for determining the active set of adding wheels; and means for varying the extent of movement of the member according to the character of the transaction in hand.

26. In a machine of the character described, the combination with printing and accumulating mechanism including two sets of adding wheels, actuators therefor and means for controlling said mechanism to determine which set of wheels shall be operated upon; of a special type carrier mounted to swing and having a segmental series of type and spring-drawn to successively present the latter at the printing line said carrier having a positioning stop; a vibratory actuator normally retracting said carrier to withhold its type from printing position; an indexing member mounted to rock and having two reversely arranged sets of stepped stops to coöperate with that of the carrier; a pitman engageable with and disengageable from said member on opposite side of its rocking center; and means for controlling the engagement and disengagement by the means for determining the active set of adding wheels.

27. In a machine of the character described, the combination with printing and accumulating mechanism including two sets of adding wheels, actuators therefor and means for controlling said mechanism to determine which set of wheels shall be operated upon; of a special type carrier mounted to swing and having a segmental series of type and spring-drawn to successively present the latter at the printing line said carrier having a positioning stop; a vibratory actuator normally retracting said carrier to withhold its type from printing position; an indexing member mounted to rock and having two reversely arranged sets of stepped stops to coöperate with that of the carrier; a pitman engageable with and disengageable from said member on opposite side of its rocking center; means for controlling the engagement and disengagement by the means for determining the active set of adding wheels; and means for varying the stroke of the pitman according to the character of the transaction in hand.

28. In a machine of the character described, the combination with printing and accumulating mechanism including two sets of adding wheels, actuators therefor and means for controlling said mechanism to determine which set of wheels shall be operated upon; said means including a manipulative lever; of a special type carrier mounted to swing and having a segmental series of type and spring-drawn to successively present the latter at the printing line said carrier having a positioning stop; a vibratory actuator normally retracting said carrier to withhold its type from printing position; an indexing member mounted to rock and having two reversely arranged sets of stepped stops to coöperate with that of the carrier; a pitman engageable with and disengageable from said member on opposite side of its rocking center; and a lever engaged with said pitman and vibrated by the aforesaid manipulative lever.

29. In a machine of the character described, the combination with printing and accumulating mechanism including two sets of adding wheels, actuators therefor and means for controlling said mechanism to determine which set of wheels shall be operated upon, said means including a manipulative lever; of a special type carrier mounted to swing and having a segmental series of type and spring drawn to successively present the latter at the printing line said carrier having a positioning stop; a vibratory actuator normally retracting said carrier to withhold the type from printing position; an indexing member mounted to rock and having two reversely arranged sets of stepped stops to coöperate with that of the carrier; a pitman engageable with and disengageable from said member on opposite side of its rocking center; a spring tending to engage it therewith on one side of such center; and means operated by the aforesaid manipulative lever to shift the pitman disengaging it on such side and engaging it on the opposite side of said member's rocking center.

30. In a machine of the character described, the combination with printing and accumulating mechanism including two sets of adding wheels, actuators therefor and means for controlling said mechanism to determine which set of wheels shall be operated upon, said means including a manipulative lever; of a special type carrier mounted to swing and having a segmental series of type and spring-drawn to successively present the latter at the printing line said car-

rier having a positioning stop; a vibratory actuator normally retracting said carrier to withhold the type from printing position; an indexing member mounted to rock and having two reversely arranged sets of stepped stops to coöperate with that of the carrier; a pitman engageable with and disengageable from said member on opposite side of its rocking center; a spring tending to engage it therewith on one side of such center; a lever engaged with said pitman; and means for operating such lever by the aforesaid manipulative lever to shift the pitman in opposition to said spring.

31. In a machine of the character described, the combination with printing and accumulating mechanism including two sets of adding wheels, actuators therefor and means for controlling said mechanism to determine which set of wheels shall be operated upon, said means including a manipulative lever; of a special type carrier mounted to swing and having a segmental series of type and spring-drawn to successively present the latter at the printing line said carrier having a positioning stop; a vibratory actuator normally retracting said carrier to withhold the type from printing position; an indexing member mounted to rock and having two reversely arranged sets of stepped stops to coöperate with that of the carrier; a pitman engageable with and disengageable from said member on opposite side of its rocking center; a spring tending to engage therewith on one side of such center; a lever engaged with said pitman; a rocking cam for throwing said lever, said cam operated by the aforesaid manipulative lever; and means for operating such lever by the aforesaid manipulative lever to shift the pitman in opposition to said spring.

32. In a machine of the class described, the combination with differentially reciprocatory racks and type carriers; two sets of adding pinions movable into and out of engagement with said racks; means for predetermining which set of pinions shall primarily coöperate with the racks; and key-operated means for variously regulating the periods of engagement and disengagement of racks and pinions; of a movable special type carrier for characterizing different transactions and having a positioning stop; and an indexing member having two sets of stops to coöperate with the latter, said member being varyingly movable to present a stop of one set or the other to the special type carrier stop, under control of said predetermining and said key operated means.

33. In a machine of the character described, the combination with differentially reciprocatory racks and type carriers; two sets of adding pinions movable into and out of engagement with said racks; means for predetermining which set of pinions shall primarily coöperate with the racks; and key-operated means for variously regulating the periods of engagement and disengagement of racks and pinions; of a movable special type carrier for characterizing different transactions and having a positioning stop; and an indexing member mounted to rock and having two reversely arranged sets of stops to coöperate with the latter; means for controlling the direction of movement of said member by the aforesaid predetermining means; and means for controlling the extent of movement of the indexing member by said key-operated means.

34. In a machine of the character described, the combination with differentially reciprocatory racks and type carriers; two sets of adding pinions movable into and out of engagement with said racks; means for predetermining which set of pinions shall primarily coöperate with the racks; and key-operated means for variously regulating the periods of engagement and disengagement of racks and pinions; of a movable special type carrier for characterizing different transactions and having a positioning stop; and an indexing member mounted to rock and having two reversely arranged sets of stops to coöperate with the latter; a pitman engageable with and disengageable from said member on opposite side of its rocking center; means for controlling the engagement and disengagement by the aforesaid predetermining means; and means for controlling the stroke of the pitman by the aforesaid key-operated means.

35. In a machine of the character described, the combination with differentially reciprocatory racks and type carriers; two sets of adding pinions movable into and out of engagement with said racks; means for predetermining which set of pinions shall primarily coöperate with the racks; and key-operated means for variously regulating the periods of engagement and disengagement of racks and pinions; of a movable special type carrier for characterizing different transactions and having a positioning stop; and an indexing member mounted to rock and having two reversely arranged sets of stops to coöperate with the latter; a pitman engageable with and disengageable from said member on opposite side of its rocking center; means for controlling the engagement and disengagement by the aforesaid predetermining means; a swinging arm coupled to the pitman; and means for differentially moving said arm by the aforesaid key-operated means.

36. In a machine of the character described, the combination with differentially reciprocatory racks and type carriers; two sets of adding pinions movable into and out of engagement with said racks; means for predetermining which set of pinions shall

primarily coöperate with the racks; and key-operated means for variously regulating the periods of engagement and disengagement of racks and pinions; of a movable special type carrier for characterizing different transactions and having a positioning stop; and an indexing member mounted to rock and having two reversely arranged sets of stops to coöperate with the latter; a pitman engageable with and disengageable from said member on opposite side of its rocking center; means for controlling the engagement and disengagement of the aforesaid predetermining means; a swinging arm coupled to the pitman; and a second arm fast with the said swinging arm and acted upon severally by the different departments of the aforesaid key-operated means to move the swinging arm varying extents.

37. In a machine of the character described, the combination of differentially reciprocatory racks and type carriers; two sets of adding pinions separately engageable with and disengageable from said racks and either set adapted to receive an item or amount to the exclusion of the other set by engagement with the racks during movement thereof in one direction; means for engaging and disengaging the pinions and racks, with provisions for varying adjustments to differently regulate the periods of engagement and disengagement of racks and pinions; manipulative means for effecting such varying adjustments; a special type carrier having a series of type one for characterizing amounts to be printed incidental to accumulation on one of the sets of pinions and others for characterizing numbers or amounts set up as a result of operation of the aforesaid manipulative means; indexing means controlled by the latter for positioning the special type carrier to present such other type at the printing line but normally adapted to position the carrier with the one type at the printing line; impression devices for the special type individually releasable but normally disabled in this respect by the special type carrier in an adding operation; impression devices for the first mentioned type-carriers both individually and coöperatively releasable; means for effecting release of the special type carrier impression devices coöperatively with the other impression devices; and manipulative means for predetermining the set of adding pinions to primarily cooperate with the racks, such manipulative means under one adjustment disabling said last mentioned means.

38. In a machine of the character described, the combination of differentially reciprocatory racks and type carriers; two sets of adding pinions separately engageable with and disengageable from said racks and either set adapted to receive an item or amount to the exclusion of the other set by engagement with the racks during movement thereof in one direction; means for engaging and disengaging the pinions and racks, with provisions for varying adjustments to differently regulate the periods of engagement and disengagement of racks and pinions; manipulative means for effecting such varying adjustments; a special type carrier having a series of type one for characterizing amounts to be printed incidental to accumulation on one of the sets of pinions and others for characterizing numbers or amounts set up as a result of operation of the aforesaid manipulative means; indexing means controlled by the latter for positioning the special type carrier to present such other type at the printing line but normally adapted to position the carrier with the one type at the printing line; spring-actuated impression hammers for the type of the first-mentioned carriers; latches or detents for said hammers coöperatively releasable and individually releasable under control of the carriers; a spring-actuated hammer for the type of the special carrier; a latch for said hammer individually releasable under control of the said carrier; a coupler between said latch and the next adjacent latch of those first-mentioned; and manipulative means for predetermining the set of adding pinions to primarily coöperate with the racks, such manipulative means under one adjustment disabling said coupler.

39. In a machine of the character described, the combination of differentially reciprocatory racks and type carriers; two sets of adding pinions separately engageable with and disengageable from said racks and either set adapted to receive an item or amount to the exclusion of the other set by engagement with the racks during movement thereof in one direction; means for engaging and disengaging the pinions and racks, with provisions for varying adjustments to differently regulate the periods of engagement and disengagement of racks and pinions; manipulative means for effecting such varying adjustments; a special type carrier having a series of type one for characterizing amounts to be printed incidental to accumulation on one of the sets of pinions and others for characterizing numbers or amounts set up as a result of operation of the aforesaid manipulative means; indexing means controlled by the latter for positioning the special type carrier to present such other type at the printing line but normally adapted to position the carrier with the one type at the printing line; spring-actuated impression hammers for the type of the first-mentioned carriers; latches for said hammers coöperatively releasable and individually releasable under control

of the carriers; a spring-actuated hammer for the type of the special carrier; a latch for said hammer individually releasable under control of the said carrier; a coupler between said latch and the next adjacent latch of those first-mentioned; means for predetermining the set of adding pinions to primarily coöperate with the racks; an adjustable lever controlled by said means; and a coupler displacing member actuated by the latter.

40. In a machine of the character described, the combination of differentially reciprocatory racks and type carriers; two sets of adding pinions separately engageable with and disengageable from said racks and either set adapted to receive an item or amount to the exclusion of the other set by engagement with the racks during movement thereof in one direction; means for engaging and disengaging the pinions and racks, with provisions for varying adjustments to differently regulate the periods of engagement and disengagement of racks and pinions; manipulative means for effecting such varying adjustments; a special type carrier having a series of type one for characterizing amounts to be printed incidental to accumulation on one of the sets of pinions and others for characterizing numbers or amounts set up as a result of operation of the aforesaid manipulative means, said carrier having a positioning stop; a rocking indexing member having two reversely arranged sets of graduated stops to coöperate with that of said carrier and an intermediate stop to normally position the carrier with the first mentioned type at the printing line; spring-actuated impression hammers for the type of the first mentioned carriers; latches for said hammers coöperatively releasable and individually releasable under control of the carriers; a spring-actuated hammer for the type of the special carrier; a latch for said hammer individually releasable under control of the said carrier; a coupler between said latch and the next adjacent latch of those first mentioned; a coupler displacing member; a lever engaged with said member; a pitman engageable with and disengageable from the indexing member on opposite side of its rocking center, and engaged with said lever for such purpose; means for effecting varying strokes of the pitman by the aforesaid manipulative means; means for predetermining the set of adding pinions to primarily engage the racks, said latter means including a manipulative lever; and operating connections between the latter and the before-mentioned adjustable lever.

41. In a machine of the character described, the combination of reciprocating racks; two sets of pinions adapted to be engaged therewith and disengaged therefrom; manipulative means for predetermining the primarily active set of pinions, said means including a lever; a double-acting cam-arm operated by said lever; depressible amount keys; means for holding the same depressed; and key-releasing means comprising an arm acted upon by said cam-arm.

NELSON WHITE.

Witnesses:
J. G. VINCENT,
ARTHUR W. FRENZEL.