J. P. HUNTER & H. KÜNTZLER.

ELIMINATION AND CLEAR SIGNAL FOR ADDING MACHINES.

APPLICATION FILED APR. 8, 1909.

1,054,554.

Patented Feb. 25, 1913

3 SHEETS—SHEET 1.

Fig. 1.

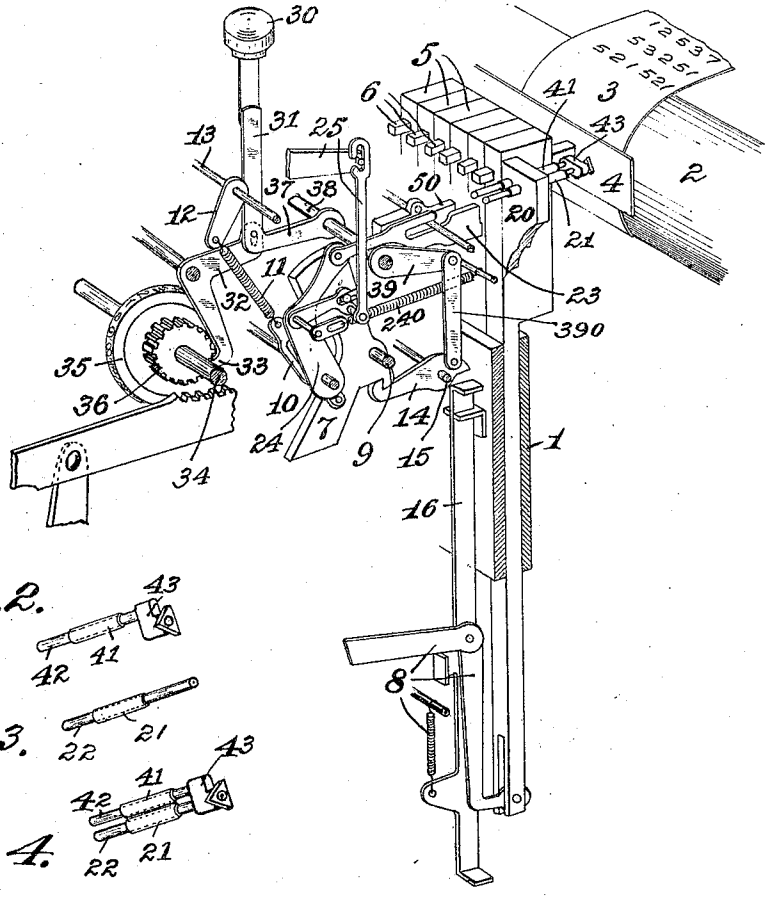


Fig. 2.




Fig. 3.




Fig. 4.




WITNESSES

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3 SHEETS—SHEET 2.

*Fig. 5.*

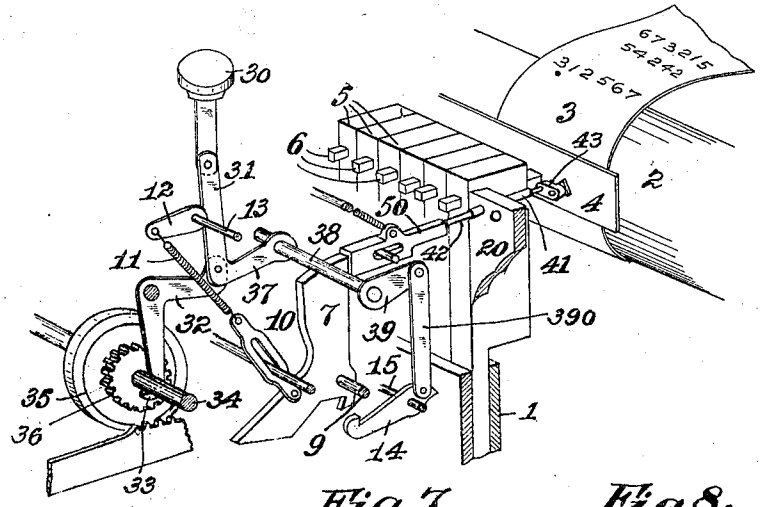


*Fig. 6.*

9,8 7 6,5 6 7.8 9△
,4 5 6,7 6 5.4 3
3,4 5 6,7 6 5.4 3△
,6 5 4,3 4 5.6 7
6 5 4.3 2
,3 4 5,2 3 4.5 0
9,8 7 6,5 4 3.2 1△
1,2 3 4,5 6 7.8 9△
1,2 3 4,5 6 7.8 9

2,6 9 1,5 6 7.8 1

*Fig. 7.*

6 7 8,9 8 7.6 5 0
5 6 7,8 7 6.5 4
5,6 7 8,9 8 7.6 5△
1,2 3 4,5 4 3.2 1

2,4 8 1,4 0 7.4 0

*Fig. 8.*

3,4 5 6,7 6 5.4 3△
4,5 6 7,8 7 6.5 4

4,5 6 7,8 7 6.5 4

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3 SHEETS—SHEET 3.

ILLUSTRATION OF REGULAR LISTING SHOWING ITEMS ELIMINATED AND CLEAR-SIGNAL ONLY ON THE FIRST REGULAR ITEM

| | |
|---|---|
| 45.880 | 1,647.55 |
| 87.65 | 55.00 |
| 680.09 | 8.99Δ |
| 305.07 | 55.00Δ |
| 34.07 | 5.78Δ |
| 55.00Δ | 456.00 |
| 5.89Δ | 45.00 |
| 444.00 | 45.78 |
| 50.79 | 457.00 |
| 1,647.55 | 2,706.33 |

*Fig. 10.*

ILLUSTRATION OF TRIAL BALANCE FIGURES SHOWING A CREDIT ELIMINATED ITEM AS THE FIRST REGISTRATION PRINTING THE TWO SIGNS IN COMBINATION, THE ELIMINATION SIGN AND THE CLEAR SIGNAL SIGN.

| TRIAL BALANCE | | | |
|---|---|---|---|
| DEBITS | DEBITS | DEBITS | CREDITS |
| 125.00⊖ | 386.32 | 606.18 | 550,000.00Δ |
| 56.00 | 44.07 | 50.89 | 65,000.00Δ |
| 89.00 | 77.09 | 2.05 | |
| 55.00 | 3.06 | 678.00 | |
| 6.66 | 44.67 | 44.08 | |
| 8.89 | 44.88 | 44.99 | |
| 45.77 | 6.09 | 5.55 | |
| 386.32 | 606.18 | | |
| | | 1,431.74 | 615,000.00 |

*Fig. 9.*

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# UNITED STATES PATENT OFFICE.

JOHN P. HUNTER AND HENRY KÜNTZLER, OF WILKES-BARRE, PENNSYLVANIA, ASSIGNORS TO ADDER MACHINE COMPANY, A CORPORATION OF PENNSYLVANIA.

## ELIMINATION AND CLEAR SIGNAL FOR ADDING-MACHINES.

1,054,554. Specification of Letters Patent. Patented Feb. 25, 1913.

Application filed April 8, 1909. Serial No. 488,684.

*To all whom it may concern:*

Be it known that we, JOHN P. HUNTER and HENRY KÜNTZLER, citizens of the United States, and residents of Wilkes-Barre, Luzerne county, Pennsylvania, have invented certain new and useful Improvements in Elimination and Clear Signals for Adding-Machines, of which the following is a specification.

Our invention relates to adding machines and has for its object the provision of means whereby there is produced simultaneously or successively upon the record strip of the machine an indication that the machine has been cleared, that is, that its numeral wheels have been returned to zero and that an item registered thereafter has not been accumulated upon the numeral wheels. There are known in this art machines provided with a mechanism whereby there is automatically indicated on the record strip a clear signal printed alongside of the first item enumerated after the machine has been cleared or the numeral wheels returned to zero. There are also known in this art machines provided with means for printing an indication opposite an item which has been listed on the record strip but not accumulated on the numeral wheels. This kind of designation may, for convenience, be called an elimination signal. In all such mechanisms known to us it has been impossible to use these two signals simultaneously, because they are printed at the right of the item to be designated and in the same place, and would interfere with each other if attempts were made to print them simultaneously, and for the further reason that the clear signal is necessarily operated from the totalizing key and cannot therefore be printed beside an item of registration while the elimination signal is necessarily operated from the non-adding key in connection with an item of registration and cannot therefore be printed when the totalizing key is depressed. And yet there are times when in book-keeping practice it is desirable to use both the clear signal and elimination signal simultaneously.

In general book-keeping practice it is well known that the debit items on a ledger usually exceed in number the credit items. When an adding machine is used to assist in the book-keeping the machine should therefore preferably be customarily used in registering debit items and the credit items which are fewer in number should be recorded during the abnormal operations of the mechanism. It is, however, very important that a book-keeper should know in printing credit items that the machine is clear and does not contain any items theretofore accumulated, therefore the clear signal should indicate the return of the numeral wheels to zero when credit items are to be registered just as well as when debit items are registered and it should do this also when the attention of the operator is called to the fact that the item registered is not added. Our invention provides a means for making this simultaneous registration desired.

In the drawings, Figure 1 is a perspective view of a portion of an adding machine embodying our invention: Fig. 2 is a detail of the elimination signal type; Fig. 3 is a detail of the clear signal type; Fig. 4 is a detail of the combined elimination signal and clear signal type; Fig. 5 is a perspective view similar to that shown in Fig. 1 but showing the clear signal removed, the non-adding key depressed and the hammer released to strike the elimination signal type, and Figs. 6, 7, 8, 9 and 10 are illustrations of records showing the practical use of the invention.

In the drawings, 1 represents a portion of the frame of an adding machine.

2 is a platen roller suitably supported and adapted to be intermittently rotated in harmony with the operations of the other mechanism.

3 is a record strip supported upon the platen and moving with it.

4 is an inking ribbon held adjacent to the record strip.

5, 5, are type carriers arranged in denominational series and each adapted to be vertically moved to bring to the line of print the several types 6, 6, which are vertically arranged according to the ordinals in the type carriers and are each adapted to be propelled forward to the line of print by hammers 7. The type carriers are each moved upward by means of a series of links and levers indicated at 8, which are operated from the main shaft of the machine by intermediate mechanism (not shown). The hammers are loosely mounted in denominational series, corresponding to the series of type,

upon a common shaft 9. Each of them is provided with a slotted link 10 connected to an energizing spring 11 secured at its opposite end to a bar 12 secured to and oscillating with a shaft 13. In front of each hammer is a hammer hook 14. All of these hooks are loosely mounted to rotate on a common rod or shaft 15. In the usual operation of the machine the shaft 13 is oscillated from the main shaft through intermediate mechanism which stretches the springs 11 and charge them with energy. The hammers 7 are normally detained against this action by the hammer hooks 14 by which they are engaged. But when the type carriers are elevated through the mechanism indicated at 8 to bring the proper types to the line of print release bars 16, also released by the same mechanism, are lifted by springs to rotate the hammer hooks on their shaft and thus to release the hammers 7 and enable them to be propelled against the types.

The clear signal comprises the following parts: A bracket or supplementary carrier 20 is mounted at the side of the units type carrier. A sleeve 21 is placed in an aperture in the bracket 20 and inside of the sleeve is arranged a reciprocating type bar 22 around which inside of the sleeve is arranged a retracting spring (not shown). A hammer hinged to form two parts, 23 and 24, is cocked by a mechanism indicated at 25 and which is operated from the totalizing key of the machine. When the totalizing key is depressed, then through the mechanism indicated the hammer 23 is cocked and when the first item thereafter is registered this hammer is propelled forward through the spring 240 with the units hammer and the clear signal is printed alongside of the item.

The elimination signal comprises the following parts: 30 is a non-adding key provided with a depending stem 31. From this stem is oscillated an elbow lever 32 terminating in a hook 33 which is adapted to pass beneath the shaft 34 on which the numeral wheels 35 are carried. These wheels are provided with pinions indicated at 36 which are adapted to engage with rack bars which are reciprocated longitudinally of the machine to an extent governed by the numeral keys. In the normal operation of the machine, at the end of the forward stroke of the main shaft, the numeral wheel shaft 34 is lowered so that the numeral wheels engage with their several racks and on the return stroke of the main shaft each wheel is rotated by its rack. When the non-adding key is depressed the hook 33 is oscillated to a position beneath the shaft 34 and the latter is thereby prevented from being lowered, and therefore no engagement takes place between the numeral wheel pinions and their respective racks and the items are not accumulated on the wheels, although they are printed as usual, because the printing mechanism is not interfered with. The stem 31 of the non-adding key is provided with an arm 37 which is secured to a transverse shaft 38 to which in turn is secured a lever 39 connected by means of a link 390 to the hammer hook 14. It is obvious that when the non-adding key is depressed the hammer hook 14 will be lifted just as when the release bar 16 is elevated, and the hammer 7 will be propelled forward. A sleeve 41 is placed in an aperture in the bracket 20 and inside of it is arranged a reciprocating type bar 42 around which is a retracting spring (not shown). This type bar has an offset head 43 which is in the plane of the type bar 22 and is suitably apertured to permit the type bar 22 to reciprocate through it. On the end of the head 43 is placed a character as a triangle △ which will permit the clear signal character ⊙ to be printed inside of it, thus ⊙. A striker 50 is positioned in the path of the units hammer and when propelled forward it strikes the end of the type bar 42 and propels its head forward against the inking ribbon and record strip. Whenever the non-adding key 30 is depressed the hook 14 is released and the elimination signal is printed. If, however, the totalizing key has been depressed and the clear signal hammer 23 has been cocked through the mechanism indicated at 25, then the clear signal will be printed as the next item is registered. If the non-adding key is not depressed then the clear signal type bar 22 will pass through the head 43 of the elimination type bar 42 and the clear signal ⊙ will be printed, but if the non-adding key is depressed then the elimination signal will be printed also thus ⊙ indicating not only that the machine has been cleared but that the item registered has not been accumulated.

As shown in Fig. 1, the numeral wheel 35 is attached to a pinion 36, which meshes with a rack located beneath it and adapted by reciprocatory motion to rotate the pinion. The shaft 34, which carries the pinion and numeral wheel is adapted to be moved in a vertical plane, the movement being sufficient to throw the pinion into and out of engagement with the rack below. As is well known in the art, the wheel 35 is turned to its zero position, or the register is cleared, by the rack moving the pinion backward until it contacts with a zero stop. In the printing of an item without its accumulation the key 30 shown in the same figure is depressed. This rocks bell-crank 32, the lower end of which 33 hooks under shaft 34, raising the pinion 36 from engagement with the actuating rack below, thereby preventing the movement of the latter from actuating the register to record the item.

In Fig. 6, there is shown a series of items as printed on the record strip, the first item

displaying both the clear signal and the elimination signal indicating that the machine was clear when the item was registered and that such item was not accumulated. The third, seventh and eighth items, each displaying the elimination signal, indicate that they were not accumulated, while the total gives the sum of the accumulated items only. In Fig. 7, the first item displays the clear signal only indicating that the machine was clear when the item was registered, and that the item was accumulated; the third item displays the elimination signal and indicates that such item was not accumulated. In Fig. 8 the first item displays the clear signal and elimination signal and consequently only the second item is shown in the total. In Fig. 9 there is shown an illustration of a trial balance with the totals on the debit side carried over in each column to a final total and the machine then cleared and the credit items each listed with the elimination signal, both series showing the clear signal at the beginning. In Fig. 10 there is shown a regular series with the clear signal opposite the first item, the total added in and carried forward, several items not accumulated and each displaying the elimination signal and the total showing the accumulation with these items eliminated.

What we claim as new is:—

1. In an adding machine, a special type bar bearing a clear signal, in combination with a second special type bar bearing an elimination signal, and means comprising a hammer for each type bar whereby they are propelled to the line of print simultaneously or successively.

2. In an adding machine, a special type bar bearing a clear signal, in combination with a second special type bar bearing an elimination signal, and means whereby they are propelled to the line of print simultaneously or successively.

3. In an adding machine, a special type bar bearing a clear signal, in combination with a second special type bar bearing an elimination signal, and means comprising two hammers arranged side by side, one for each type bar, whereby they are propelled to the line of print separately or together.

4. A type bar bearing a distinguishing character, in combination with a second bar bearing another character and means whereby both characters are printed simultaneously within a single subdivision of the printing space.

5. In an adding machine, a type bar having a head bearing an elimination signal offset into the plane of movement of a second type bar bearing a clear signal, the elimination signal head being apertured to permit of the passage of the clear signal type bars.

6. A movable typebar having an offset head whereby a character borne thereon may be printed outside of the vertical plane of the typebar, in combination with a block adapted to strike the type bar to effect a printing operation.

7. A combined type comprising two bars, each carrying type adapted to reciprocate side by side, one provided with an offset head through which the other is adapted to pass.

8. A combined type comprising two bars, each carrying type adapted to reciprocate side by side, one provided with an offset head through which the other is adapted to pass, whereby the type carried by both are imprinted in the same plane.

9. A combined type comprising two bars, each carrying type adapted to reciprocate side by side, one provided with an offset through which the other is adapted to pass, whereby the type carried by both are imprinted in the same plane which is outside of the plane of reciprocation of the type bar with the offset head.

10. In an adding machine, a special type bar bearing a clear signal, in combination with a second special type bar bearing an elimination signal, and means comprising a hammer for each type bar whereby they are propelled to the line of print simultaneously or successively in the same vertical plane.

11. In an adding machine, a special type bar bearing a clear signal, in combination with a second special type bar bearing an elimination signal, and means comprising two hammers arranged side by side, one for each type bar, whereby they are propelled to the line of print separately or together but in the same vertical plane.

12. In an adding machine provided with accumulating, printing and clearing mechanism and means whereby the function of the accumulating mechanism may be interrupted, a clear signal, an operative connection between it and the clearing mechanism, an elimination signal, an operative connection between it and the interrupting means of the accumulating mechanism, and means whereby both of these signals may be simultaneously printed in the same vertical plane.

13. In an adding machine provided with accumulating, printing and clearing mechanism and means whereby the function of the accumulating mechanism may be interrupted, a clear signal, an operative connection between it and the clearing mechanism, an elimination signal, an operative connection between it and the interrupting means of the accumulating mechanism, and means whereby both of these signals may be simultaneously printed, comprising separate hammers cocked from the respective mechanisms.

14. In an adding machine provided with

accumulating, printing and clearing mechanism and means whereby the function of the accumulating mechanism may be interrupted a clear signal, an operative connection between it and the clearing mechanism, an elimination signal, an operative connection between it and the interrupting means of the accumulating mechanism, and means whereby both of these signals may be simultaneously printed, comprising separate hammers cocked from the respective mechanisms, and adapted to operate the two signals simultaneously or successively.

15. In an adding machine, the combination with the clearing, printing and adding mechanisms thereof, of means for displaying automatically at the beginning of a list of non-accumulated items, as an incident to the printing of the first item on the list, suitable signals to indicate that the adding mechanism was clear when the list was begun and that the item was not accumulated.

16. In an adding machine, a special type bar or carrier bearing a distinguishing character, means coöperating therewith to cause said character to be automatically printed with the first item registered after clearing the adding mechanism, and a second special type bar or carrier bearing a different distinguishing character and means coöperating therewith to cause the latter character to be printed with any non-accumulated item registered whether the adding mechanism had been cleared or not.

17. In an adding machine, a special type bar bearing a clear signal, in combination with a second special type bar bearing an elimination signal, and means comprising a hammer whereby it is propelled to the line of print separately or together but in the same vertical plane.

18. The combination of a plurality of printing surfaces, one of which is movable relatively to the other in a printing direction and both of which are adapted to print simultaneously within the same unit space, substantially as shown and described.

Witness our hands this 6th day of April 1909, at Wilkes-Barre, Pa.

JNO. P. HUNTER.
HENRY KÜNTZLER.

Witnesses:
MARY A. HEALEY,
CHARLES S. MCNAB.