R. E. WING.

ADDING MACHINE.

APPLICATION FILED DEC. 6, 1916.

1,351,082.

Patented Aug. 31, 1920.

2 SHEETS—SHEET 1.

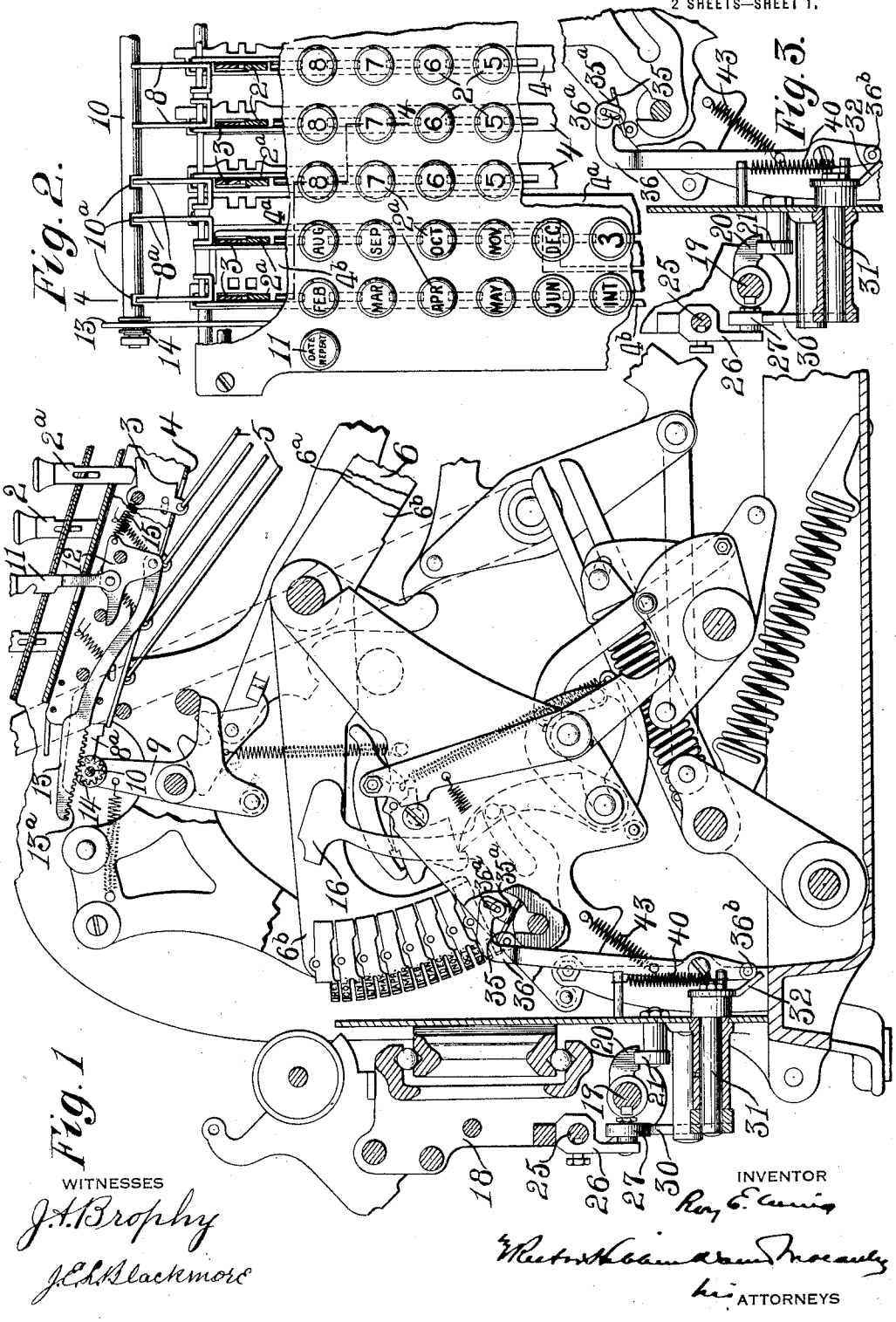


Fig. 2.

Fig. 3.

Fig. 1

WITNESSES

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2 SHEETS—SHEET 2.

Fig. 6.

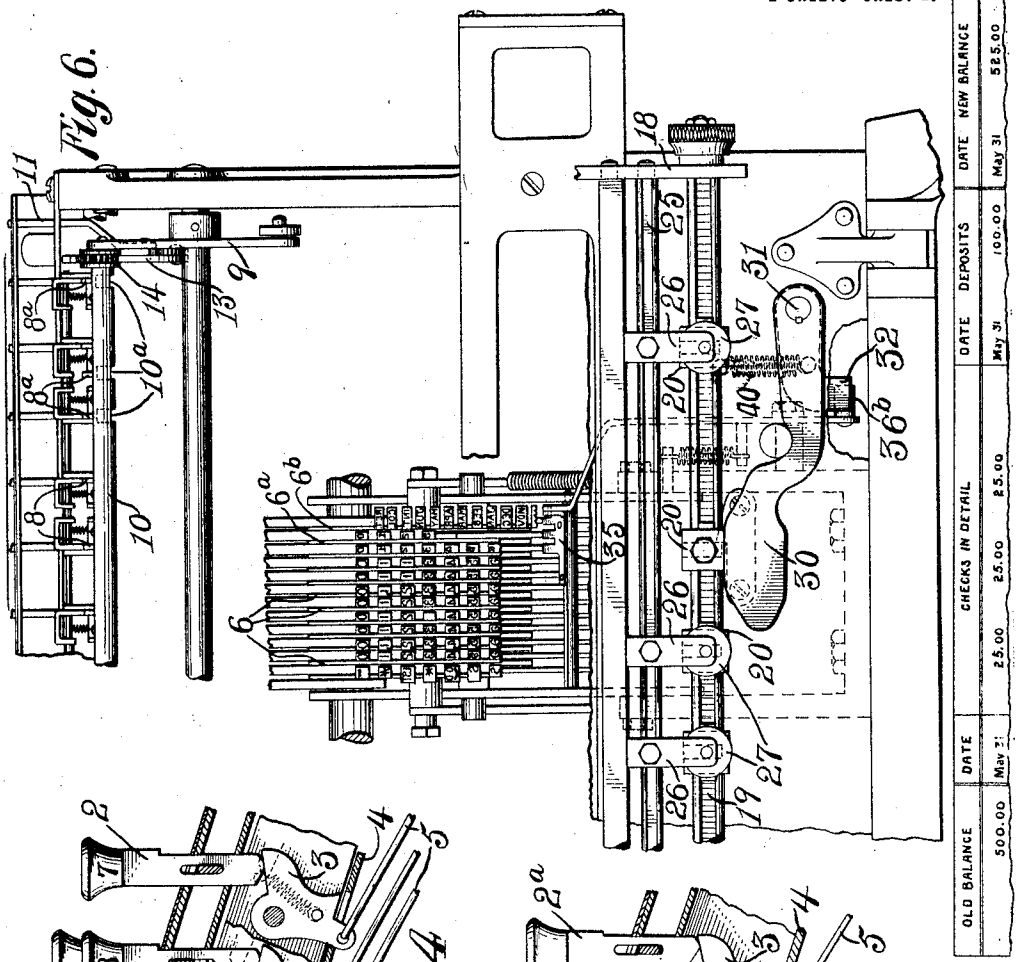


Fig. 4.

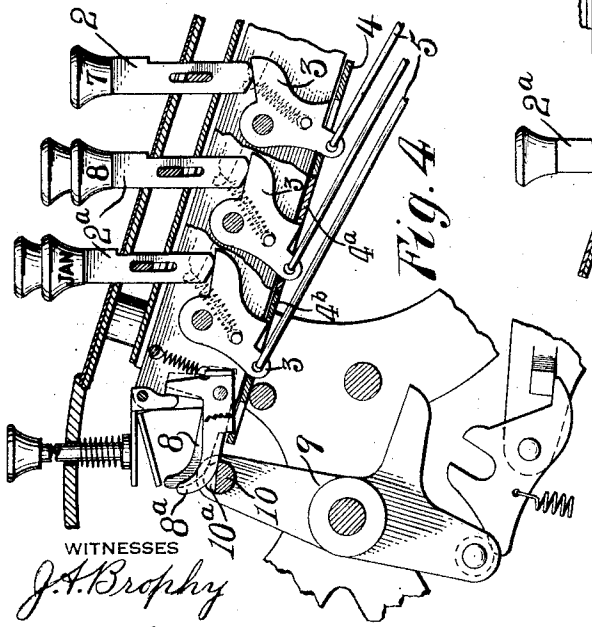


Fig. 7.

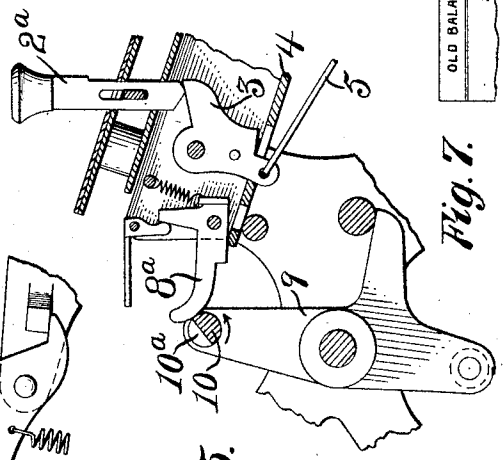


Fig. 5.

WITNESSES

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ADDING-MACHINE.

1,351,082. Specification of Letters Patent. Patented Aug. 31, 1920.

Application filed December 6, 1916. Serial No. 135,455.

To all whom it may concern:

Be it known that I, ROY E. WING, 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-Machines, of which the following is a specification.

Adding and listing machines as commonly known upon the market at the present time are frequently equipped with keyboard and printing arrangements which provide for the recording of dates along with amounts. In certain kinds of work, for instance, that of making entries upon bank ledger sheets, it happens that the same dates will occur in connection with different amounts. Thus the same date may apply to the entry of the amount of a check, the amount of a deposit, and the amount of a new balance.

The object of the present invention is to relieve the user of the machine from the necessity of setting up over again the same date in connection with a series of entries of amounts. In carrying out this object I provide for maintaining the necessary condition of mechanical elements in the machine for automatically printing the same date during several successive operations of the machine for the registering and recording of different amounts, so that the user need not concern himself as to any setting up for date printing until occasion arises for changing the date.

In adding and listing machines as commonly constructed the keyboard comprises a number of rows of keys combined with appropriate detent mechanism whereby when a key is depressed it will be held down during the ensuing operation of the machine and then automatically released and restored. In carrying out my present invention in the form here shown I provide a special key and connections through which the action of the releasing and restoring mechanism may be modified in such a manner that the detent associated with a row or rows of keys used for setting up dates, will not be affected by the operation of the automatic release mechanism, though that mechanism continues to operate upon detents associated with the keys for setting up amounts.

I have here shown my invention applied to a machine having a laterally shiftable paper carriage and stop devices for setting the carriage in certain columnar positions. Inasmuch as the printing of a horizontal row of items may call for the printing of the same date in connection with certain of them but the printing of no date at all in connection with others, I provide for automatically preventing the date-printing in such other columns by the position of the carriage, notwithstanding the fact that the release mechanism, in so far as date-keys are concerned, remains disabled.

In the drawings which accompany and form part of this specification, Figure 1 represents a sectionalized left-side elevation of a portion of an adding and listing machine embodying my invention; Fig. 2 represents a fragmentary top plan view of the keyboard with some parts in horizontal section; Fig. 3 represents a cross-sectional elevation corresponding with the rear lower portion of Fig. 1, but showing a different condition of certain parts; Fig. 4 is a view on an enlarged scale corresponding with the upper rear portion of Fig. 1 and illustrating a different condition than there shown; Fig. 5 is a similar view though not including as many parts and illustrating a different condition from the one shown in Fig. 4; Fig. 6 is a fragmentary rear elevation of the machine; Fig. 7 shows a portion of a ledger sheet with a horizontal row of entries thereon as made upon the machine.

I have shown my invention as applied to the well-known Burroughs adding and listing machine which is now so familiar to those skilled in the art as to require no detailed description nor even specific reference to prior patents. The reference numeral 2 designates the depressible amount keys, 3 the small bell-crank levers upon which they operate, 4 the slotted strips which are pressed rearward by said bell-cranks, 5 the stop-rods or wires which regulate the extent of movement of the type-carrying levers 6, and 8 the pivoted detents which engage slots in the rear portion of the strips 4. The reference numeral 9 designates the vibrating bail which operates upon the detents to disengage them from the strips and operates upon the strips to force them forward and restore the keys to normal elevated position. The bail is vibrated in an operation of the machine through means and in a manner so long familiar as to require no detailed description.

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The three rows of keys to the left, Fig. 2, are those used in connection with the printing of dates, and these keys are designated 2^a to distinguish them from the keys used for the printing of amounts, though these keys of the three left-hand rows have the same construction and operate in exactly the same way upon detent strips as the other keys do, and the detents 8^a associated with those strips are exactly like the other detents.

For the purpose of so modifying the action of the key-release devices as to leave the keys depressed in the three left-hand rows at the will of the operator, I make the cross rod 10 of the bail 9 rotatable by mounting it in suitable bearings in the side pieces of that bail and I notch or cut out that rod at three different places in line with the three detents 8^a. The notched or cut-out portions are designated 10^a, and it will be obvious that they provide for a forward movement of the release bail without affecting those certain detents, as best illustrated in Fig. 4, where the bail is shown swung forward to the limit. With the cross rod of the bail in such position as there illustrated and with a key in each of the three left-hand rows depressed, an operation of the machine would result in automatically releasing any depressed keys of the other rows, but would not affect the keys of the three left-hand rows, so that in another operation of the machine with a different amount set up, the same date would be printed over again.

The means by which the operator is enabled to control the action in the above respects, comprise a depressible key 11 arranged at the uper left-hand portion of the keyboard and labeled "Date repeat" (see Fig. 2), a small bell-crank lever 12 to which the stem of said key is pivoted, and a bar 13 pivoted to said lever and having a rack 13^a at its rear end in mesh with a small gear wheel 14 secured to the cross rod 10 of the release bail. A spring 15 applied to the small bell-crank 12 normally upholds the said special key as illustrated in Fig. 1. Under such conditions the said cross-rod will rotate when the release bail swings forward but not through a range which will bring the cut-out portions 10^a into alinement with the detents 8^a. The said rod rotates in a counter-clockwise direction and will have reached the position shown in Fig. 5 under normal conditions, so that its outer periphery operates upon the detents 8^a the same as at other points such periphery operates upon the detents 8. However, if the special key has been depressed the rod will have been rotated clockwise in the beginning, and then in an operation of the machine when the rod arrives at a position to operate upon the detent, the several cutout portions 10^a will be alined with the detents 8^a and the release bail will complete its forward movement without affecting those detents. The latter will simply be received in the cutout portions as illustrated in Fig. 4. The special key 11 is provided with a notch so that it may be hooked under the upper keyboard plate, being a common expedient for enabling a special key to be indefinitely kept down.

Manifestly with an equipment such as above described the user is enabled to maintain a date set up as long as he pleases and he can therefore proceed with the printing of a series of amounts and automatically repeat the same date with those amounts as often as occasion may require.

Passing to the matter of preventing the date printing when the laterally shiftable carriage is in a columnar position calling for the printing of an amount without any date, those of the printing hammers 16 which are associated with the three left-hand rows of keys, are designed to be blocked so that notwithstanding the fact that date-keys remain depressed and associated type-carrying levers 6 move to printing position in an operation of the machine, no printing will take place. This is automatically regulated by the position of the paper carriage. This carriage is as usual mounted vertically at the rear of the machine so as to slide across the latter, and suitable stop devices or tabulating means are provided whereby certain columnar positions of the carriage may be definitely determined.

The carriage is designated by the numeral 18 and it carries the usual tabulator rod 19 with adjustable stop-fingers 20 thereon to coöperate with a fixed stop-plate 21 secured against the back panel of the machine. On another cross rod 25 mounted between the side pieces of the carriage I arrange adjustable fixtures in the form of brackets 26 carrying rollers 27, and these rollers are designed to function in connection with the bringing into play of the means whereby the date-printing hammers are prevented from acting. Referring to Fig. 6 said rollers are designed to act upon the upper cam edge of an arm 30 which is secured to a rock shaft 31 journaled in the stationary frame of the machine. Upon the forward end of said rock-shaft there is secured a blade 32 with a cam-like end portion which turns downward and inclines forward.

A shutter 35 is pivoted in rear of the three hammers and is movable to a position where it will block their action as illustrated in Fig. 1. An upturned ear 35^a of this shutter has a stud occupying a cam slot 36^a in the forwardly extending arm of a vertically-arranged lever 36 which is pivoted near its lower end to the frame of the machine and at a point below its pivot has

a roller stud 36^b to coöperate with the aforesaid blade 32. A spring 40 applied to said blade holds it up and its cam portion under such conditions restrains the lever. An inferior spring 43 applied to the latter tends to draw its upper arm forward and thus force the shutter into position where it will block the said three hammers as shown in Fig. 1. This occurs when one of the rollers 27 operates upon the cam arm 30 with the result of depressing the said blade. When said rollers are out of position to operate upon the cam blade, as shown in Figs. 3 and 6, the shutter is held up by reason of the superiority of the spring 40 over the lever spring 43, and the three hammers are free to operate.

It will be seen that the last-described arrangement enables the operator to keep his special key down for the repeated printing of the same date in connection with several different amounts along the same horizontal line, while at the same time amounts may be printed at one or more places without any date, the control in this regard being wholly automatic so that the user does not need to concern himself about it.

The tabulator stop and the special roller fixtures which I supply, will of course be set according to the particular work in hand, and having been appropriately set the work will proceed and the amount will be printed with a date where a date is called for and without date where none is required. Fig. 7 represents an example of work wherein, upon a bank ledger sheet, an old balance is printed without date, then a series of check amounts with a date, and then the amount of a deposit with the same date, and finally the amount of the new balance with this same date. In doing this work the operator, having of course seen to it that the tabulating devices and special fixtures are properly adjusted, and having depressed the "date repeat" key and hooked it down, simply proceeds to operate the machine using amount keys only, having in the first instance set down his date-keys which remain down until he is ready to use a new date.

The key-board arrangement which provides for setting up dates, and the corresponding arrangement of detent devices and type-carriers, follow those commonly employed in the commercial Burroughs machines. The six upper or rearward keys of each of the two lefthand rows are marked for the months of the year. The remaining three keys of the farthest row to the left are specially marked, but these three keys and all twelve month keys coöperate with the same detent plate 4^b, and correspondingly the leftmost type-carrier 6^b has a series of fifteen types, as illustrated in Figs. 1 and 6. The said detent plate 4^b is widened throughout the area of the twelve month keys as illustrated in Fig. 2, and formed with a double series of slots to receive the key bell-cranks 3 of both rows. The three foremost keys of the second row are marked with numerals 1, 2, 3, and they coöperate with a detent plate 4^a which is widened at its forward portion as permitted by the narrow forward portion of the detent strip 4^b, and which has a narrow rearwardly extending portion lying between that detent strip 4^b and the detent strip 4 of the third row of keys. The type-carrier 6^a with which these three keys of the second row coöperate carries only four types,—a zero type and types with numerals 1, 2 and 3, as shown in Fig. 6.

I claim:

1. The combination with a plurality of sets of depressible keys, detents for holding down selected keys of the different sets, automatic mechanism for tripping the detents to release the keys, and means for causing the detent-engaging member; of said mechanism to idly pass a certain detent or detents leaving the same in action when tripping the balance of the detents.

2. The combination with a plurality of sets of depressible key, detents for holding down selected keys of the different sets, automatic mechanism for tripping the detents to release the keys, said mechanism including an oscillating bail, and means for causing the same to idly pass a certain detent or detents leaving them in action when tripping the balance of the detents.

3. The combination with a plurality of sets of depressible keys, detents for holding down selected keys of the different sets, automatic mechanism for tripping the detents to release the keys, said mechanism including an oscillating bail with an adjustable cross-rod to act upon the detents and having provisions for missing one or more of them under certain adjustment, and manipulative means for bringing about such adjustment.

4. The combination with a plurality of sets of depressible keys, detents for holding down selected keys of the different sets, automatic mechanism for tripping the detents to release the keys, said mechanism including an oscillating bail with an adjustable cross-rod to act upon the detents and having one or more cut-out portions to provide for missing detents under a certain adjustment, and means for bringing about such adjustment under manual control.

5. The combination with a plurality of sets of depressible keys, detents for holding down selected keys of the different sets, automatic mechanism for tripping the detents to release the keys, said mechanism including an oscillating bail with a rotatable cross-rod having cut-out portions, and means for setting the rod to cause said cut-out por-

tions to aline with certain of the detents during action of the rod upon the balance of the detents.

6. The combination with a plurality of sets of depressible keys, detents for holding down selected keys of the different sets, automatic mechanism for tripping the detents to release the keys, said mechanism including an oscillating bail with a rotatable cross-rod having cut-out portions, means for rotating said rod during oscillation of the bail, and manipulative means for setting the rod to bring the cut-out portions thereof in line with certain of the detents.

7. The combination with a plurality of sets of depressible keys, detents for holding down selected keys of the different sets, automatic mechanism for tripping the detents to release the keys, said mechanism including an oscillating bail with a rotatable cross-rod having cut-out portions and a gear, a rack in mesh with the gear, and a key coupled to the rack.

8. The combination with a laterally shiftable paper carriage and stops for setting it at different columnar positions, and type-carriers and impression-making means; of devices controlled by the carriage and operating to disable part of the impression-making means.

9. The combination with a laterally shiftable paper carriage and stops for setting it at different columnar positions, and type-carriers and printing hammers; of devices controlled by the carriage and operating to disable certain of the hammers.

10. The combination with a laterally shiftable paper carriage and stops for setting it at different columnar positions, and type-carriers and printing hammers; of a shutter to block certain of said hammers, and means controlled by the carriage and operating to set said shutter in effective position.

11. The combination with a laterally shiftable paper carriage and stops for setting it at different columnar positions, and type-carriers and printing hammers; of a shutter to block certain of said hammers, a spring-actuated lever operatively connected with said shutter, a pivotally mounted blade for restraining said lever, a cam-arm united with said blade, and one or more fixtures on the carriage to operate upon said cam-arm substantially as and for the purpose described.

12. The combination with a plurality of sets of keys and automatic release mechanism common to the several sets; of means for disabling said mechanism as to a certain set or sets while maintaining it effective as to the balance, a laterally shiftable paper carriage and stops for setting it at different columnar positions, and type-carriers and impression-making means; of devices controlled by the columnar setting of the carriage and operating to disable part of the impression-making means corresponding with the set or sets of keys affected by disablement of release mechanism.

ROY E. WING.

Witnesses:
J. A. BROPHY,
HAMILTON A. CONNOR.