

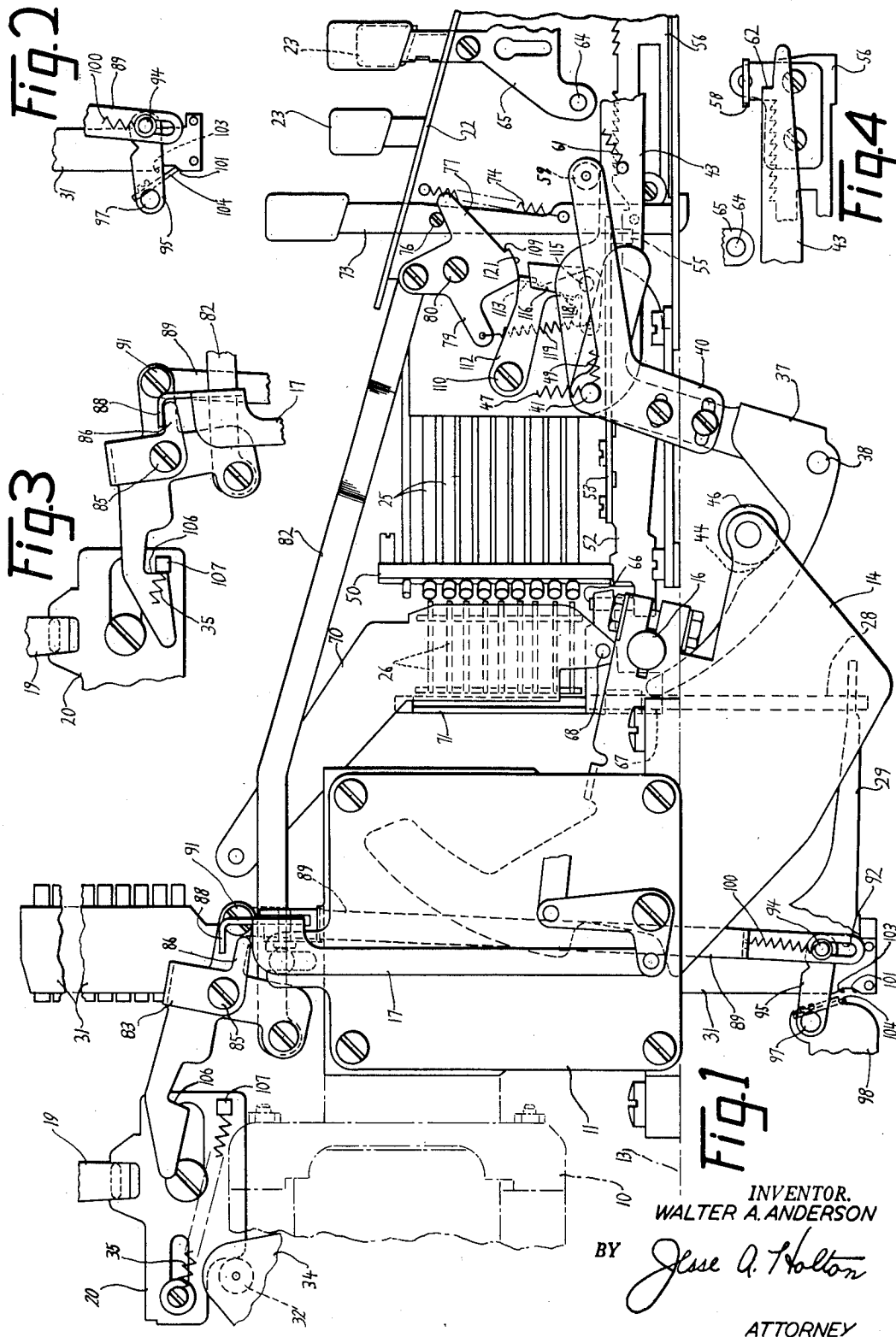
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ENTRY CORRECTION MECHANISM FOR PRINTING OR COMPUTING MACHINES

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ENTRY CORRECTION MECHANISM FOR PRINTING OR COMPUTING MACHINES

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This invention relates to printing and computing machines, and more particularly to an entry correction mechanism therefor.

Such machines are usually capable of fast operation, and frequently an undesired amount is entered therein which, if not corrected before the machine is operated to print and/or compute, would cause confusion of the printed record and/or render erroneous the total amount accumulated in the computing mechanism.

Furthermore, these machines include a carriage for supporting a record that is adapted for advancing the record after each printing operation, in which case, with the printing of the undesired entry, the record would be advanced in the usual manner, with the resultant using of valuable printing space on the record.

An object of the present invention is to provide a machine cycling mechanism for preventing the printing and computing of an amount entered in the machine, and the advancing of the printed record, while the amount entered is restored.

An object of the invention ancillary to the above stated object is to provide a mechanism such as described that is simple in construction, economical to manufacture and assemble in the machine, and dependable in operation.

With these and other objects in view, the invention comprises certain novelties of construction and combinations of parts, the elements being set out in appended claims, and a preferred form of embodiment hereinafter described with reference to the drawings which accompany and form part of the specification.

In the drawings:

Figure 1 is a left side view in vertical elevation of an adding machine embodying the present invention, showing the parts in normal position, and

Figure 2 is a fragmental detail view showing the type bars blocked from movement at non-printing position,

Figure 3 is a fragmental detail view showing the paper feeding blocked during the machine cycle, and

Figure 4 is a fragmental detail view showing the back space slide and restoring lever in normal position.

The invention is herein exemplified in connection with an adding machine of the well known Sundstrand type such as is disclosed in Patents Nos. 1,198,487, 1,965,611 and 2,088,982 of Oscar J. Sundstrand, and Patents Nos. 2,251,100 and 2,267,886 of Walter A. Anderson, to which patents reference may be made for an understanding of features of construction not fully shown herein.

Referring to Figure 1 of the drawings, the machine is driven by means of an electric motor 10 connected with a gear reduction means contained in a housing 11 mounted on a base indicated generally by the numeral 13. The gear reduction means includes a one revolution clutch such as is disclosed in Patent No. 2,251,100 and is connected in the manner described and shown therein with a plate 14 secured on the machine main shaft 16. Cycling of the machine is normally effected by the depressing of the motor bar shown in the patent referred to above which raises a slide 17 and releases the one revolution clutch.

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Mounted on the machine frame, not shown, is a carriage, not shown, similar in construction to the carriage disclosed in Patent No. 2,267,886 adapted for advancing a record in the manner disclosed therein and having a paper feed lever 19 comparable with the lever 45 shown in said patent which engages a slide 20 comparable to the slide 46 in said patent which reciprocates and oscillates the lever 19 to advance the record during each machine cycle.

The machine is provided with a keyboard frame 22 in which is supported amount entering keys 23 which, when depressed, index the amount entered in the manner disclosed in Patent No. 1,965,611. It will here be sufficient to say that each numeral key operates a plunger 25 to set corresponding stops 26 serriatum into the path of movement of a tail pin 28 connected with a tail 29 pivoted on each type bar 31 and differentially position the type bars in printing position.

During a machine cycle, the main rock shaft 16 is rocked first clockwise through a forward stroke, during which the type bars 31 are raised to printing position under the control of stops 26, and a stud 32 in a swinging lever 34 pivoted on the machine frame (not shown) is swung away from the slide 20 to enable a spring 35 to move the paper feed slide 20 rearwardly and oscillate the lever 19 to cock the paper feeding mechanism for advancing the record as disclosed in Patent No. 2,267,886. The main rock shaft 16 is then rocked counterclockwise through a return stroke, during which the entered amount is printed on the record, slide 20 is moved forwardly by the stud 32 to oscillate lever 19 and advance the record, the amount entered is entered in the totalizer, not shown, and stops 26 are restored as the machine cycle is completed.

The means provided for restoring an amount entered in the amount keys 23 are similar to that disclosed in Patent No. 1,198,487. In general these means include a cradle 37 pivoted on a shaft 38 supported in the machine frame, not shown. Secured on the cradle 37 is a plate 40 carrying a pivot stud 41 mounting a restoring lever 43. Cradle 37 is provided with a cam edge 44 that normally bears on a roller 46 supported on plate 14 under the tension of springs 47 and 49. Plungers 25 are slidably supported in a bar 50 vertically disposed on a swinging arm 52 pivoted on the keyboard frame 22 which pivots upon each depression of a key 23 to index an amount in stops 26. Secured to the swinging arm 52 is a plate 53 carrying a pin 55 engaging a back space slide 56 slidably supported on the frame 22, and having a bent-over ear 58, Figure 4. Plate 40 carries a pin 59 against which the restoring lever 43 rests under the tension of a spring 61 to position a shoulder 62 of the restoring lever 43 in engaging alignment with the bent-over ear 58 during a cycling of the machine, and in a position below and clear of the ear 58 when the machine is fully restoring as shown in Figure 4.

With the entering of an amount in keys 23, arm 52 is pivoted to index the amount in stops 26, and the back space slide 56 is moved rearwardly space by space by means of the pin 55. During the forward stroke of the machine cycle plate 14 is rocked clockwise, and cradle 37 counter-clockwise, about its shaft 38, stretching springs 47 and 49 and drawing the restoring lever 43 rearwardly. During this movement, the restoring lever 43 is tensioned to bear against a pin 64, carried on the repeat key 65, by means of spring 61, to position the shoulder 62 in alignment with the bent-over ear 58 of the back space slide 56. With the return stroke of the machine cycle, cradle 37 is restored to its normal position by the tension of springs 47 and 49, moving the restoring lever 43 forwardly, causing the shoulder 62 thereof to engage the bent-over ear 58 of the back space slide 56 and restore

the slide, and by means of pin 55, the arm 52 and plungers 25. Arm 52 is connected by means of a pin 66 with a block 67, slidably supported on a shaft 68 in a frame 70 supporting stops 26. Vertically supported on the block 67 is a cam 71 which, during the restoring movement of arm 52 wipes the stops indexed to their restored position.

The mechanism described in the foregoing is that normally provided in the Sundstrand machine for automatically restoring an amount set up in stops 26 at the completion of each machine cycling, and is described here to show its cooperation and timing relation with the present invention.

In the prior machines, when it is desired to correct an amount set up in stops 26 without entering that amount in the totalizer, or printing same on the record, the correction thereof is performed by manually depressing a correction key which acts directly upon the back space slide 56. To effect correction with such a key, it is necessary to apply a pressure on the key to effect its depression that is substantially greater than that required to enter the amount in the amount keys 23. The result is an unbalanced keyboard which retards the speed of machine operation. Furthermore, during fast operation of the machine, the possibility of insufficient depression of the key and incomplete restoration of the entered amount is ever present.

The present invention provides a means for cycling the machine to utilize the power actuated restoring mechanism described above to insure complete restoration of an amount entered in the keys 23, and without enabling the accumulating and printing of the entered amount.

To do this a correction key 73 is mounted for vertical slidable movement in the keyboard frame 22 and is normally tensioned to its raised position by means of a spring 74. Fast in the key 73 is a pin 76 which overlies a leg 77 forming part of a catch member 79 pivoted on a stud 80 in the keyboard frame 22. The catch member 79 is connected by means of a link 82 with a cradle 83 pivoted on a stud 85 secured in the machine frame, not shown. Forming part of cradle 83 is a leg 86, that underlies a bent-over ear 88 forming part of the vertical motor trip slide 17 so that with the depression of key 73, pin 76 rocks the catch member 79 and draws link 82 forwardly to rock the cradle 83 and cause the leg 86 thereof to act upon the ear 88 and raise the vertical motor trip slide 17 to cycle the machine.

When correcting an amount entered in the keys 23 during a cycling of the machine, it is important that the amount entered therein be not added in the machine totalizer, not shown, to upset the total previously accumulated therein, nor printed on the record to confuse the recordings previously printed and utilize valuable printing space on the record.

Referring to Patent No. 1,965,611, it will be seen, in Figures 10, 17 and 17a thereof, that in order that an amount entered in keys 23 may be both added in the totalizer and printed on the record, the type bars must rise at least to the position for printing the numeral "1." The present invention, therefore, provides means for preventing such a movement of type bars 31 during a machine cycling initiated by the correction key 73. To do this, a link 89 is pivoted on a stud 91 secured in cradle 83. The lower end of this link is provided with a slot 92 that embraces a stud 94 in a lever 95 fastened to a shaft 97 journaled in the totalizer frame 98. Link 89 is yieldably connected with the stud 94 by means of a spring 100 for purposes to be later described. Each of the type bars 31 is notched to provide a shoulder 101 and an angularly disposed edge 103. Secured on shaft 97 is a plate 104 which normally is positioned clear of the type bars 31 as is shown in Figure 1. With the depression of key 73 and rocking of cradle 83 by means of link 82, link 89 is raised and, by means of the tension of spring 100 and lever 95, shaft 97 is rocked to position plate

104, yieldingly abutting the angularly disposed edge 103 of the type bars 31 and in inoperative but dependable engaging alignment with the shoulder 101 thereof. During the cycling of the machine, the type bars 31 are allowed to rise until arrested by the plate 104, engaging the shoulder 101 in substantially the zero printing position, in which position the printing mechanism is held inoperative as described in the patent referred to above, and the amount entered in keys 23 is restrained from adding in the totalizer.

Usually in these machines, the printed record, supported in the carriage, is advanced at least one line space during each cycling of the machine. The present invention provides means for, when correcting an amount entered in the amount keys 23, disabling the paper feeding mechanism and thereby prevent wasting of valuable printing space on the record. To do this, cradle 83 is provided with a hook 106 which normally rests clear of a pin 107 secured in the paper feed slide 20, and enables paper feeding as a normal function of the machine during each machine cycling. With the depression of the correction key 73 and rocking of cradle 83 by link 82, the hook 106 is positioned behind the pin 107, as shown in Figure 3, and restrains the slide 20 from being moved by spring 35 to cock the paper feeding mechanism as previously described herein.

Hook 106 and type bar stop plate 104 are moved simultaneously into their operative positions with the depression of the correction key 73, and before the key is depressed sufficiently to cycle the machine. Also, these parts are held in their operative positions until the machine has substantially completed its cycle. To do this, the catch member 79 is provided with a shoulder 109. Pivoted on a stud 110 secured in the keyboard frame 22 is a catch lever 112 having a bent-over ear 113. Also, pivoted on a stud 115 in the catch lever 112 is a catch release lever 116 having a bent-over ear 118 that stops on the edge of the catch lever 112 to position the release lever thereon under the tension of a spring 119. Normally the top edge of ear 113 bears on the lower edge 121 of catch member 79, said edge being concentric with stud 80.

With the depression of key 73 and the rocking of catch member 79 by pin 76 the ear 113 wipes along the edge 121 until the shoulder 109 passes by and spring 119 snaps the catch lever 112 upwardly to effect their engagement and hold the hook 106 and type bar stop plate 104 in operative positions.

During the forward stroke of the machine cycle pin 59 in plate 40 pivots the catch release lever 116, stretching spring 119, and leaving shoulder 109 and ear 113 engaged.

With the return stroke of the machine cycle, and at substantially the end thereof, pin 59 strikes the top edge of the catch release lever 116 and rocks the catch lever 112 downwardly to release the shoulder 109 and enable the restoration of all of the parts to their normal positions by means of the tension of spring 119.

While the form of mechanism herein shown and described is admirably adapted to fulfill the objects primarily stated, it is to be understood that it is not intended to confine the invention to the one form of embodiment herein disclosed, for it is susceptible of embodiment in various forms, all coming within the scope of the claims which follow.

What is claimed is:

1. In a machine of the class described, amount indexing means, stops settable by said amount indexing means, type bars each movable from a non-printing to printing positions controlled by said stops, machine cycling means, means for moving said type bars from non-printing to printing positions during each cycle of the machine, means operated by said cycling means to restore said indexing means and said stops, a correction key, means operated upon the depression of said correction key to prevent

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movement of said type bars to effective printing positions during a subsequent cycling of the machine in which said indexing means and said stops are restored.

2. In a machine of the class described, amount indexing means, stops settable by said amount indexing means, type bars each movable from a non-printing to printing positions controlled by said stops, machine cycling means, means for moving said type bars from non-printing to printing positions during each cycle of the machine, means operated by said cycling means to restore said indexing means and said stops, a correction key, means operated by said correction key to initiate an operation of said cycling means and to block movement of said type bars at an ineffective printing position during said cycle, said indexing means and said stops being restored to their non-indexed positions during said cycle.

3. In a machine of the class described, amount indexing means, stops settable by said amount indexing means, type bars each movable from a non-printing to printing positions controlled by said stops, machine cycling means, means for moving said type bars from non-printing to printing positions during each cycle of the machine, means operated by said cycling means to restore said indexing means and said stops, a correction key, means operated by said correction key to initiate an operation of said cycling means, a stop on each of said type bars, a movable stop normally set clear of said stops on said type bars, and means connected to said movable stop and said means operated by said correction key to engage said movable stop with said stops on said type bars and thereby hold said type bars in an ineffective printing position during said cycle and restoration of said indexing means and said stops.

4. In a machine of the class described, amount indexing means, stops settable by said amount indexing means, type bars each movable from a non-printing to printing positions controlled by said stops, machine cycling means, means for moving said type bars from non-printing to printing positions during each cycle of the machine, means operated by said cycling means to restore said indexing means and said stops, a correction key, means operated upon the depression of said correction key to initiate an operation of said cycling means, a shoulder on each type bar, a latch device cooperating with said shoulders, said latch being normally clear of said shoulders, means operated by said correction key to engage said latch means with said shoulders to restrain said type bars from moving to effective printing positions, a detent means operated by said correction key to hold said latch means in engagement with said shoulders during the machine cycle, and releasing means operated by said restoring means to release said latching means as the said restoring means approaches the completion of the restoration of said indexing means and said settable stops.

5. The mechanism as set forth in claim 4 including a platen, mechanism operated by said machine cycling means to rotate said platen during each machine cycle, disabling means operated by said correction key operated means to render said platen rotating mechanism ineffec-

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tive during the cycle initiated by depression of said key.

6. In a machine of the class described, amount setting means, printing means movable from a non-printing to printing positions controlled by said amount setting means, machine cycling means, means operated by said cycling means for moving said printing means from non-printing to printing positions during each cycling of the machine, means operated by said cycling means to restore said amount setting means, a carriage, a platen rotatably mounted in said carriage, means released by said cycling means and restored thereby to advance said platen during each machine cycle, a correction key, means operated by said correction key to initiate an operation of said cycling means, a stop means on said printing means, latch means adapted for cooperation with said stop means on said printing means, said latch means being normally clear of said stop means, means yieldably connecting said latch means and said means operated by said correction key for engaging said latch and said stop means and thereby restrain said printing means from moving to an effective printing position during the machine cycle, a projection on said means operated by said cycling means to advance said platen, a catch means normally clear of and engageable with said projection, means operated by said correction key to engage said catch means and said projection to prevent the release of said platen advancing means during the machine cycle, a detent means operated by said correction key to hold said latch means and said catch means in operative engagement with said stop and said projection respectively, and releasing means operated by the said restoring means to release said detent means and restore said latch and said catch means to normal positions as the said restoring means approaches the completion of the restoration of said amount setting means.

7. In a machine of the class described having an amount indexing means, printing means, machine cycling means, means operated by said cycling means to move said printing means from a home to effective printing positions under the control of said amount indexing means, means operated by said cycling means for restoring said amount indexing means to a non-indexed position, a carriage, paper feeding means in said carriage, and means operated by said cycling means to effect operation of said paper feeding means; the combination of a key means operable to initiate operation of said cycling means and to disable said paper feeding means, means operated by said key means to prevent movement of said printing means to effective printing positions, means to retain said key means and said means operated by said key means in operated condition during a machine cycle, and means operated by the means for restoring said amount indexing means to release said retained means at substantially the completion of the restoration of said amount indexing means.

References Cited in the file of this patent

UNITED STATES PATENTS

1,098,353	Morse	May 26, 1914
1,330,893	Morse	Feb. 17, 1920