

April 19, 1932.

W. W. LANDSIEDEL

1,854,748

PAPER CARRIAGE ESCAPEMENT DISABLING MECHANISM

Filed Oct. 1, 1927

2 Sheets-Sheet 1

Fig. 1.

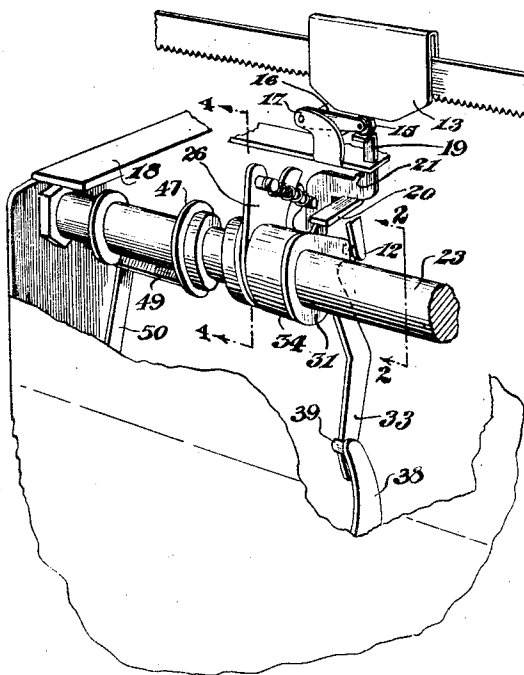


Fig. 8.

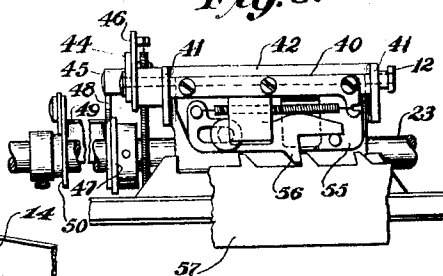


Fig. 4.

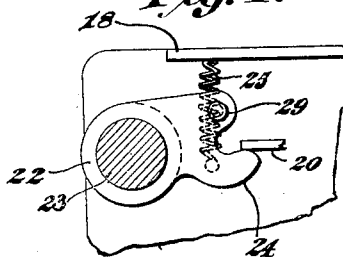


Fig. 3.

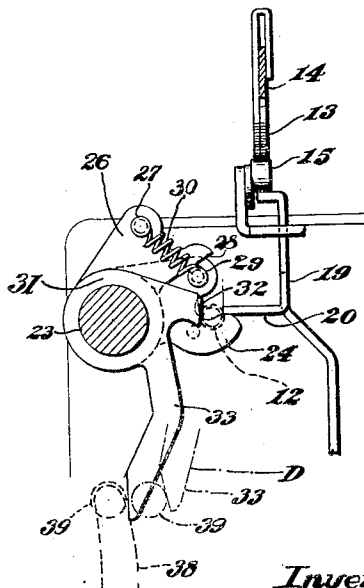
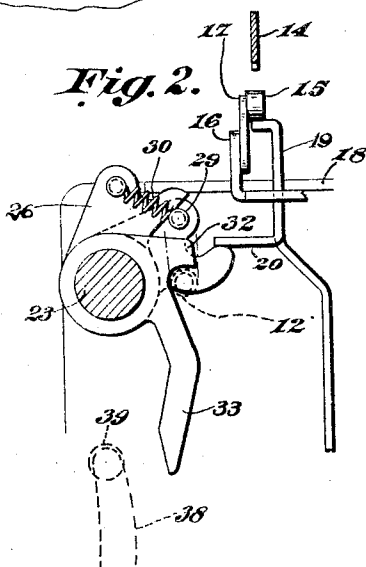


Fig. 2.



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2 Sheets-Sheet 2

Fig. 5.

40				41	
E7				F	G
OLD BALANCE	CHARGES	CREDITS	NEW BALANCE		
125 00	25 00		150 00 ₣s	12500 -	2500 ₣
150 00	25 00		175 00 ₣s	15000 -	2500 ₣
175 00		50 00	125 00 ₣s	17500 -	50 00 ₣

Fig. 7.

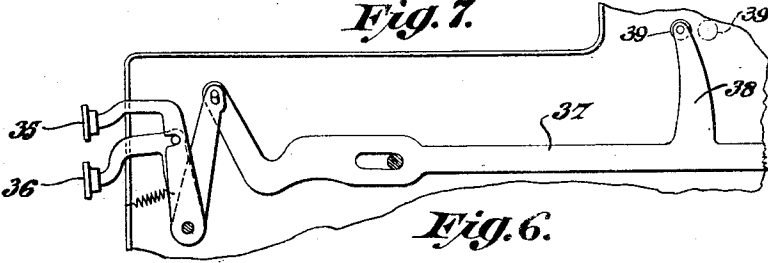
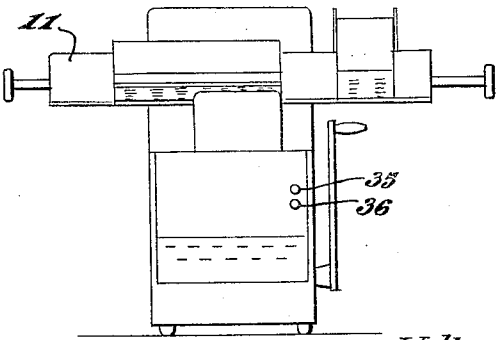


Fig. 6.



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UNITED STATES PATENT OFFICE

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PAPER CARRIAGE ESCAPEMENT DISABLING MECHANISM

Application filed October 1, 1927. Serial No. 223,439.

This invention relates to improvements in recording calculating machines involving carriages which cross-tabulate a number of columns.

5 This invention more particularly relates to a carriage controlling device for holding the carriage in a certain predetermined columnar position until a certain operation has been performed, said device being released as an incident to said operation.

10 Specifically, it is an object of this invention to provide mechanism for disabling the carriage shifting mechanism in a predetermined columnar position to prevent any shifting of the carriage prior to the taking of a sub-total or total stroke and to permit said shifting mechanism to again function during such sub-total or total stroke.

15 Other objects will be apparent from the following description taken in connection with the drawings in which:—

20 Fig. 1 is a perspective view of the attachment in escapement blocking position.

25 Fig. 2 is a section on the line 2—2 of Fig. 1 with the attachment in a non-block normal position.

Fig. 3 is a section on the line 2—2 of Fig. 1 with the attachment in blocking position as shown in Fig. 1.

30 Fig. 4 is a section of the line 4—4 of Fig. 1.

Fig. 5 is a plan of an accounting sheet and proof strip.

Fig. 6 is a front view of an accounting machine.

35 Fig. 7 is a view of the bar controlled by the total and sub-total keys.

Fig. 8 shows a plan view of a part of the carriage escapement mechanism normalized by the usual normalizing mechanism, with the operating cam in the operated position.

40 In machines of the type to which the invention is shown applied, the carriage is equipped with an escapement bar provided with shoulders or stops with which mechanism cooperates during each stroke of the operating handle regardless of what is accomplished during said stroke. This necessitates the use of two stops for the total or balance receiving columnar position, the first one stopping the carriage during the entry

of the last credit or debit item and the other one functioning during the idle stroke to arrest the carriage in the balance columnar position. If several balances are struck during cross-tabulation, a corresponding number of pairs of stops will be required. With the present invention only one stop is necessary for each balance columnar position.

55 In machines of this same type the sub-total and total keys are locked after an idle operation if the balance is negative, requiring a second idle stroke prior to the sub-total or total stroke. On each stroke the carriage shifts to the left, so that in the case of a negative total the carriage must be shifted manually to the right into the balance columnar position prior to taking the sub-total or total stroke. The means herein disclosed disables the carriage shifting means and maintains it disabled until the sub-total or total key is depressed so that the carriage will remain in the balance columnar position in all events, until a sub-total or total has been printed.

60 The advantages of this device, as can be now readily understood, are as follows. The number of stops required for the balance positions has been reduced. The carriage can not shift automatically out of its balance position except during an operation in which a balance is printed, thus insuring the printing of a balance in the balance column and in the case of a negative balance, eliminating the necessity of manually shifting the carriage prior to the taking of a sub-total or total stroke. It is assured that the balance will be printed when the carriage is in a predetermined columnar position.

65 The carriage 11, (Fig. 6), of a Dalton adding machine when used for cross tabulation is carried to the left by spring action after each printing and computing operation, the usual escapement mechanism normally functioning with every stroke of the operating mechanism. The arm 12, (Figs. 1, 2, 3 and 4), is added to an old form of escapement mechanism, which will be described later, wherein when the said mechanism is free to operate, the said arm will travel in an arcuate path and back causing the carriage to escape. 100

As previously stated, one of the objects of this invention is to prevent the functioning of the escapement mechanism during a certain stroke or strokes during cross-tabulation. This is accomplished by preventing movement of the arm 12, by means of a cam 13, (Figs. 1 and 3), carried by a bar 14 which is secured to the carriage 11. The cam acts upon a roller 15 attached to arm 16 thus depressing the arm. The arm is pivoted on a bracket 17 secured to the machine frame 18. The roller 15 thus carried downwardly depresses a slide 19 which is guided for a substantially vertical movement in the bracket 17 and is provided with a horizontal lip 20 and a shoulder 21, the said shoulder limiting the upward action of the slide by striking against the bracket. The lower end of the slide, shown broken away, may be guided by any suitable means. An arm 22, (Fig. 4), provided with a finger 24 and carrying a pin 29 is pivoted on a rock shaft 23 and is turned clockwise by the lip 20 acting upon the finger 24. A spring 25 tensioned between the finger and the machine frame holds the finger against the said lip and incidentally acts to lift the slide 19 and arm 16 back to normal position after disengagement of the cam 13. This upward movement of the slide is limited by the shoulder 21.

A follower arm 26, (Figs. 1, 2 and 3), pivoted on the shaft 23 immediately adjacent to the arm 22, is provided with a spring anchor 27, (Fig. 3), and a stop surface 28. The stop surface is held against the pin 29 by a spring 30 tensioned between the pin and the spring anchor 27.

A Y lever 31 comprising an escapement stop arm 32 and a throw arm 33 is also pivoted on the shaft 23 and is connected to the arm 26 by a hub 34, (Fig. 1). As previously explained, the action of the cam 13 upon the roller 15 will move the arm 22 clockwise. The follower arm 26 will follow in the same direction, being held by the spring 30 against the pin 29, and the Y lever 31 being fastened to the arm 26, will also follow. Thus, this lever system will, upon action of the cam 13, move from the position shown in Fig. 2 and also shown in dot and dash lines in Fig. 3 at D to that shown in full lines in Fig. 3. The stop arm 32 being thrown into the path of the escapement arm 12 and holding it in the position as shown, thus preventing its normal operation and thereby holding the carriage stationary. The cam 13, of course, continues to depress the roller 15. A blank stroke, the necessary prelude to a sub-total or total stroke, or any other necessary operation except a sub-total or total operation may now be made without escapement of the carriage.

Upon a total or sub-total operation, when either of the total keys 35 or 36, shown in Fig. 7, is pressed in, a slide 37 will be moved

rearwardly of the machine. An arm 38 on the slide 37 is provided with a roller 39 engageable with the throw arm 33, and as the arm 38 is moved, it carries the throw arm counter-clockwise and also the stop arm 32, thereby disengaging the latter from the escapement arm 12 which operating upon the stroke of the operating handle, allows escapement of the carriage which causes the cam 13 to disengage from the roller 15.

The finger 24 is held down during the latter operation but the spring 30 allows the arm 26 to be moved counter-clockwise away from the pin 29, permitting disengagement of the stop arm 32 from the escapement arm 12.

As previously mentioned, a number of these forced stops may be made during a cross-tabulation, it being only necessary to properly place a number of cams 13 in proper position upon the bar 14 carried by the carriage 11. As shown in Fig. 5, which depicts a ledger sheet 40 and proof slip 41, usual to the Dalton bookkeeping machine, a sub-total is necessary in column "E" upon sheet 40. In this case the cam 13 is set to stop the escapement at column "E", thus allowing a blank stroke without escapement, after which upon a sub-total or total stroke the escapement is released to shift the carriage to column "F" on slip 41 which being tabulated in the usual manner allows escapement to column "G".

The cam 13 is provided with two wedge ends so that it will function whether the carriage is moved to the left automatically or to the right manually. The cam can be used with an automatic shuttling mechanism when mechanism is provided for disconnecting the shuttling mechanism under control of the cam and can control the printing of totals in either right or left hand columns. Any suitable adjustable or non-adjustable fastening means may be employed to secure the cam to the bar 14, and if desired, the cam may be made integral with the bar 14.

The escapement mechanism shown in Fig. 8 is generally the same as that shown in Letters Patent of the United States No. 1,576,256 granted March 9, 1926 to B. H. Tingley. It comprises a square shaft 40 journaled in ears 41 of a bracket 42 secured to the frame of the machine. The shaft at one end carries a spring drawn arm 46 and an arm 44 carrying a roller 45. The roller is adapted to be operated by a cam 47 fastened on the rock shaft 23 to rock the shaft 40 into the position shown in Fig. 8 after it has been rocked by said spring drawn arm during the forward movement of the operating handle.

The parts are shown in Fig. 8 in the position they occupy when the machine is normalized and the operating handle is in its forward position. The normalizing is effective-

ed by the usual hand set cam 48 carried by a yoke 49 pivoted on the shaft and connected by a link 50 with the usual normalizing lever, not shown. When the machine is used for cross tabulating this cam 48 is set to its ineffective position, leaving the escapement to be controlled by the cam 47 which is rocked at each operation of the machine.

On the right hand end of the shaft 40 I have mounted the depending arm 12 hereinbefore referred to. It can be seen from Fig. 3 that the arm 32 has the same effect on the shaft 40 as the normalizing cam 48. That is, when either the arm 32 or the normalizing cam 48 obstructs movement of the shaft by the spring drawn arm 46 as the operating cam 47 is operated, the shaft 40 will remain at rest.

The shaft 40 carries an escapement pawl 55, shown generally, which slidably supports a spring pressed escapement pawl 56, both pawls cooperating with an escapement bar 57 secured to the carriage, all operating as clearly shown and described in the Tingley patent.

When the shaft 40 is held by either the normalizing cam 48 or the arm 32, the escapement pawls will not be rocked by the spring arm 43 and the operating cam 47, and the carriage will not shift to the next column.

The automatic carriage holding mechanism does not interfere with the regular normalizing mechanism. As can be seen, this automatic holding mechanism continues to function until one of the total keys has been operated.

While the embodiment of the invention herein disclosed has been shown of a particular form and applied to a particular machine, it is to be understood that this is merely for the purpose of disclosure and is not to be construed as a limitation on the claims.

I claim as my invention:

1. In a machine of the character described, the combination with a laterally shiftable carriage and escapement mechanism therefor; of means for disabling said escapement mechanism in a predetermined position of the carriage, and a total control key for enabling said escapement mechanism to function during the next subsequent operation of the machine.

2. In a machine of the character described, the combination with a laterally shiftable carriage and means for shifting the same; of means adjustable to any one of a plurality of column positions for preventing shifting of the carriage from that one columnar position, and means for overcoming said preventing means to enable said carriage to shift into another columnar position during the next subsequent operation of the machine.

3. In a machine of the character described, the combination with a laterally shiftable

carriage and means for shifting the same automatically by the operation of the machine; of means movable with the carriage for disabling said shifting means in a certain columnar position of the carriage, a total key, and means operated under control of the total key for enabling said shifting means to function to shift said carriage to a succeeding columnar position.

4. In a machine of the character described, the combination with a laterally shiftable carriage and means for shifting the same automatically by the operation of the machine; of means operable by the carriage as it moves into a certain columnar position for disabling said shifting means, a total key, and means under control of the total key for re-enabling said shifting means to permit the shifting means to function and the carriage to proceed beyond said certain columnar position.

5. In a machine of the class described, the combination with a laterally shiftable carriage and means for automatically shifting the same; of a double faced cam mounted for movement with the carriage, and means operated by the cam upon movement of the carriage in each direction into a predetermined column position for disabling the shifting means by action upon one or the other face of said cam.

6. In a machine of the class described, the combination with a laterally shiftable carriage and means for shifting the same step by step in one direction; of automatic means for disabling said shifting means, and manual means for re-enabling said shifting means and allowing the carriage to proceed in the same direction.

7. In a machine of the class described, the combination with a laterally shiftable carriage and means spring operated for shifting the carriage automatically by the operation of the machine; of automatically controlled means for obstructing an operation of said shifting means, and manual means for causing said shifting means to resume operation.

8. In a machine of the class described, the combination with a laterally shiftable carriage; of means for shifting the same comprising a shaft, a plurality of arms carried by said shaft, means for moving said shaft during an operation of the machine, manual means cooperating with one of said arms for normalizing said shaft, and automatic means cooperating with the other of said arms for preventing operation of said shaft.

9. In a machine of the class described, calculating mechanisms including a total actuating part, a paper carriage movable to predetermined columnar positions, and means for retaining said carriage in one of said columnar positions and preventing its removal therefrom until said total actuating part is operated, said means being settable to

act in any one of a plurality of said columnar positions.

10. In a machine of the class described, the combination with a carriage laterally shiftable to and from a plurality of column positions, and means for automatically shifting the same; of a cam mounted for movement with the carriage, and means controlled by said cam for interrupting the action of said automatic means in one of the column positions to and from which the carriage is shiftable.

11. The combination of a carriage, means for automatically shifting said carriage to and from a plurality of column positions, computing mechanism, total taking mechanism, means for automatically interrupting the shifting of the carriage from one of its said column positions, and means controlled by said total taking mechanism for causing the automatic shifting of the carriage to be resumed.

12. The combination of a carriage, means for automatically shifting said carriage to and from a plurality of column positions, means for automatically interrupting the shifting of the carriage in one of said column positions, a total key, and means controlled by said total key for causing the carriage to resume its shifting movements.

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