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H. RAUH

Serial No.

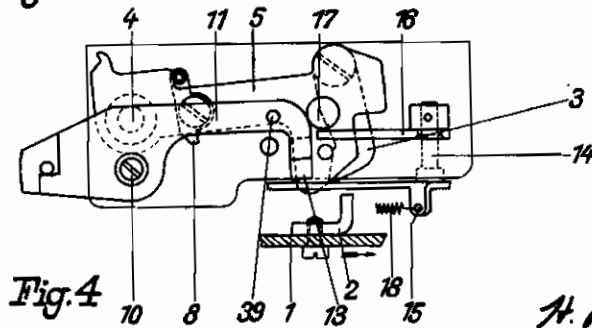
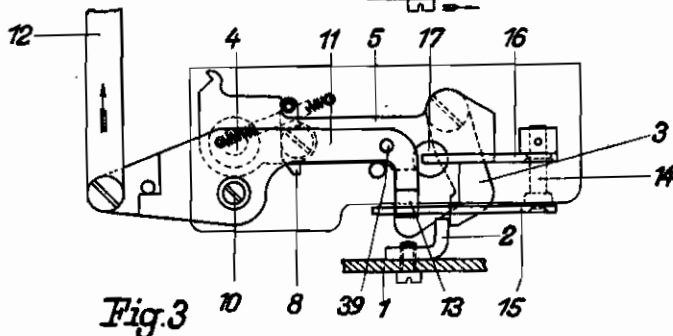
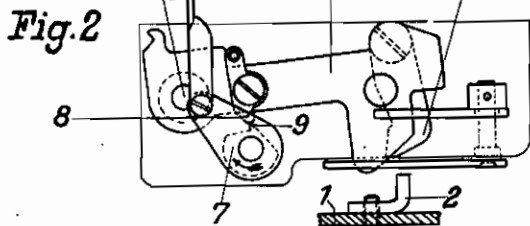
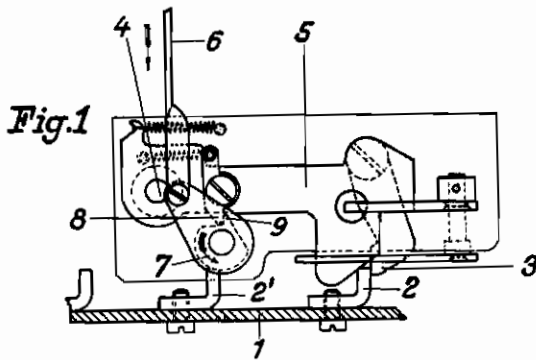
MAY 25, 1943. CARRIAGE CONTROL FOR ACCOUNTING MACHINES

308,261

BY A. P. C.

Filed Dec. 8, 1939

5 Sheets-Sheet 1



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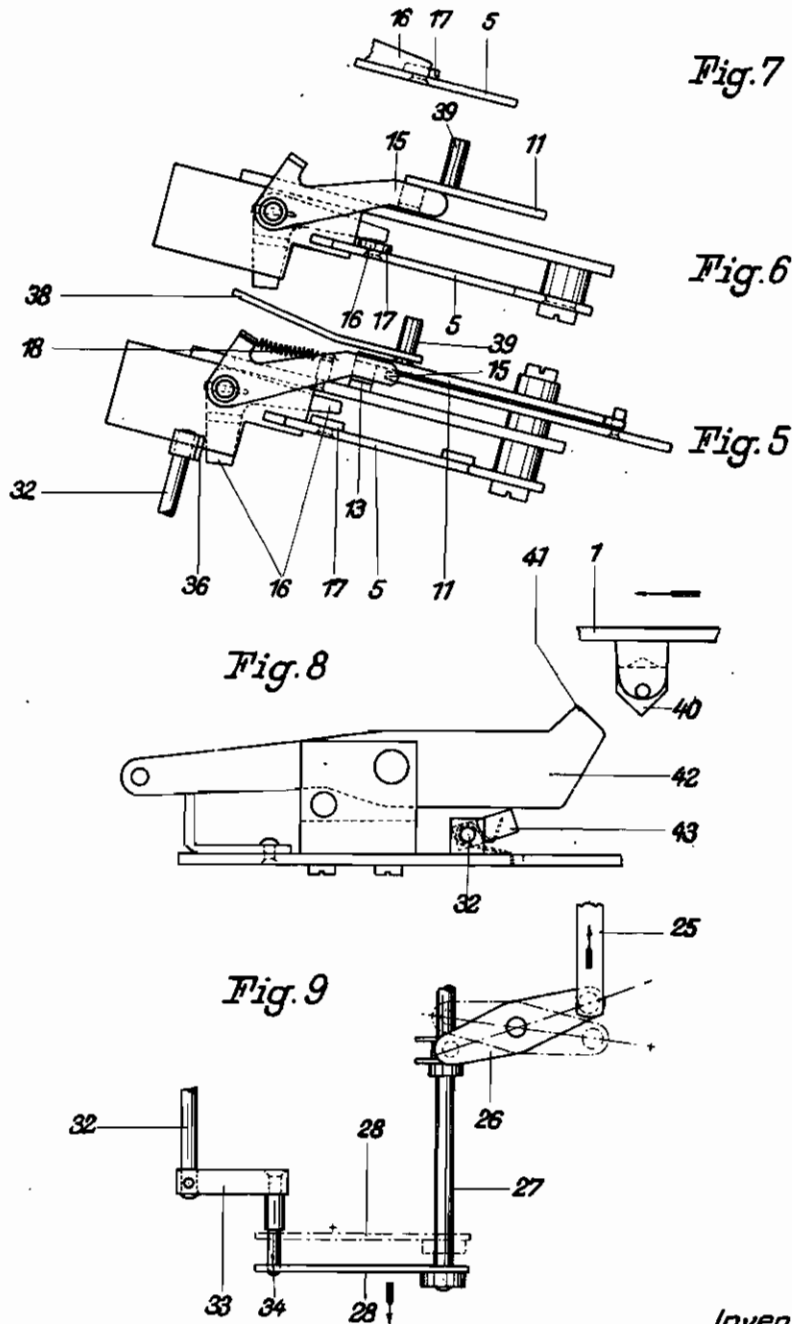
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Filed Dec. 8, 1939

Serial No.

308,261

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Serial No.

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308,261

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Filed Dec. 8, 1939

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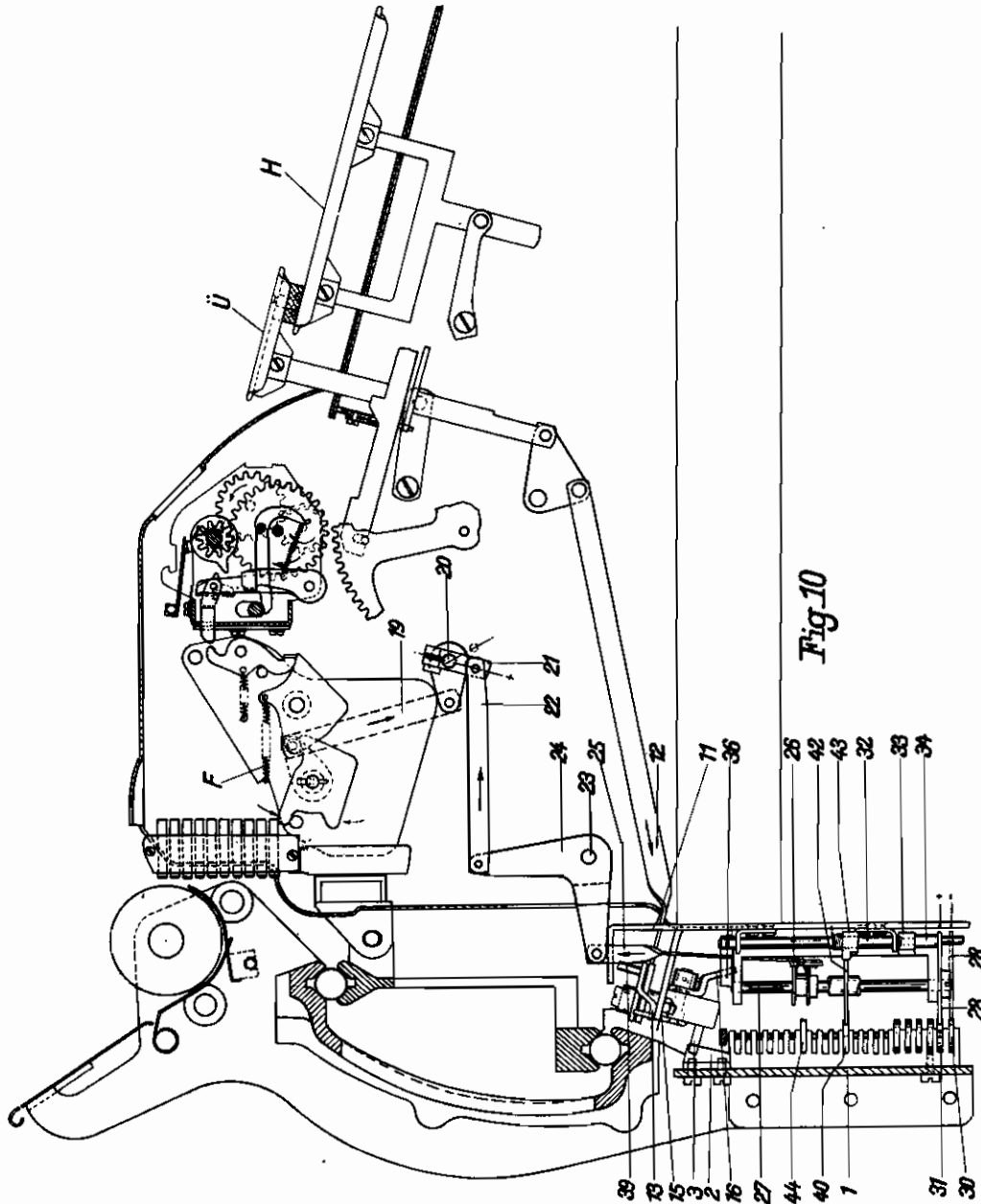


Fig. 10

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308,261

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Fig. 11

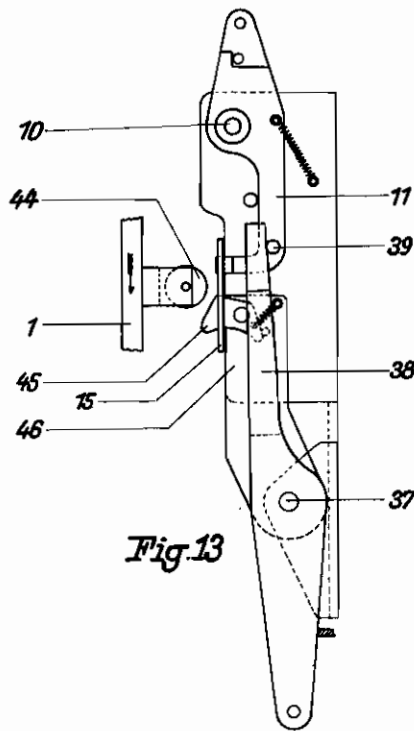
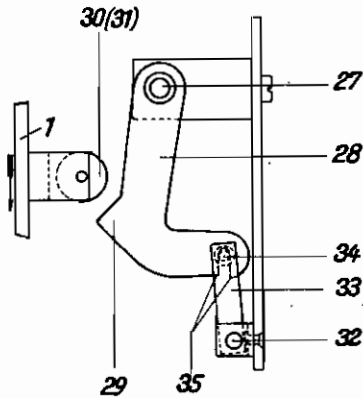


Fig. 12

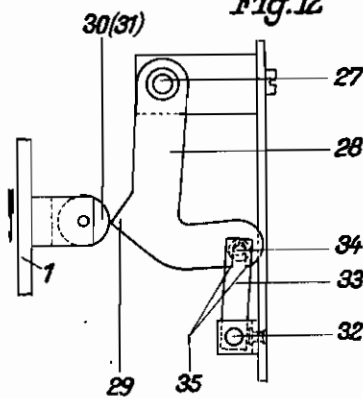


Fig. 13

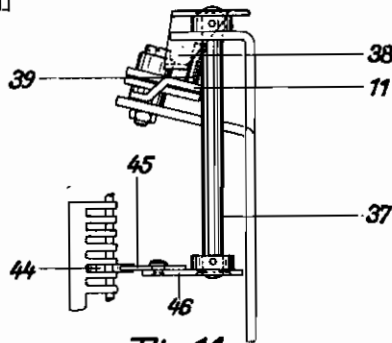


Fig. 14

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Serial No.

MAY 25, 1943. CARRIAGE CONTROL FOR ACCOUNTING MACHINES

308,261

BY A. P. C.

Filed Dec. 8, 1939

5 Sheets-Sheet 5

Saldo-Vortrag		Datum		Text	Buchung Nr.	Umsätze		Neuer Saldo	
Sal	Haben	Tag	Mon			Sal	Haben	Sal	Haben
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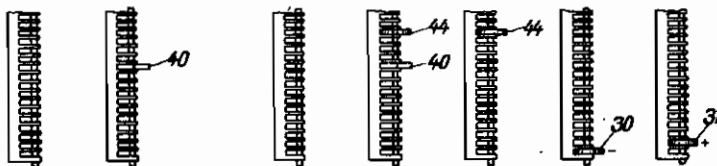


Fig. A

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# ALIEN PROPERTY CUSTODIAN

## CARRIAGE CONTROL FOR ACCOUNTING MACHINES

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vested in the Alien Property Custodian

Application filed December 8, 1939

The invention relates to a special control of the printing carriage of accounting machines, in order to automatically switch the same over from the columns for plus and minus turn overs (turn over "Debit" and turn over "Credit") into the columns for "Debit" and "Credit" for the new balance. For further explanation of the invention reference is made to the column-diagram Fig. A. On the balance-carrying forward columns for "Debit" and "Credit" follow the columns for the designation of the entrances: date, text, entrance number, then the turn over debit and credit columns, and on these follow the columns "Debit" and "Credit" of the fresh balance.

In accounting machines which calculate with such columns the problem arises, to change-over the carriage after every entrance of the plus or minus turn-over into the fresh balance debit or credit column coordinated to the corresponding line-total. In known accounting machines this is done in such a manner that at the transition of the calculation in the balancing mechanism from amounts above zero to amounts below zero stoppages occur, which prevent the entrance of a plus balance in the balance debit column or of a minus balance in the balance credit column, whereupon then, for instance by hand, the corresponding fresh adjusting of the carriage to the correct column is effected. This operation is complicated and requires time.

Accounting machines are also known which automatically select the debit or credit balance column in accordance with the content of the counting mechanism; the selection takes, however, place only when, after the entering of a turn-over item an automatic empty movement is carried out in the first portion of the debit balance column.

The invention solves the problem to attain at every printing of turn-overs in the turn-over debit or credit column, that the carriage after the printing has been completed (operation) in these columns is automatically and directly brought into the fresh balance debit or fresh balance credit column corresponding to the actual state of the transverse or balancing mechanism.

As in the accounting machines of known construction, at first a horizontal motor key and a jumping over motor key are provided. The jumping over motor key has to be depressed in order to change over the carriage from the balance carrying-forward column "Debit" to the column for the designation of the entrance. In

order to change over from the balance carrying-forward column "Credit" to the booking designation column, the jumping over motor key as well as the horizontal motor key can be depressed, because the entrance designating column follows directly on the balance carrying-forward column "Credit." In order to change over from the booking designation column to the turn-over-debit column only the horizontal motor key can be depressed, because the turn-over debit column follows directly on the booking designation column. The jumping over motor key has to be depressed, as is known, when the carriage has to be changed over from the booking designation column to the turn-over credit column. All these are known proceedings which are attained by known means.

If then in the turn-over debit column an item has to be printed, a plus or minus balance can then be produced in the transverse or balancing mechanism, according to whether the amount in the balance-carrying forward column and in the turn-over column at the addition gives plus or minus.

The invention comes herein. It has the effect: a. That, when the balancing mechanism shows a plus-balance after a turn-over item has been booked, the carriage jumps immediately automatically from the turn-over debit column into the fresh balance "Credit" column,

b. If, however, the balance or transverse mechanism shows a minus balance, the carriage jumps automatically and directly from the turn-over credit column into the fresh balance debit column,

c. When the carriage is adjusted to the turn-over credit column and the balancing mechanism shows a plus-balance, the carriage jumps over automatically and directly after the printing of the turn-over item from the turn-over credit column to the fresh balance credit column,

d. When the carriage is adjusted to the turn-over credit column and the balancing mechanism shows a minus-balance, the carriage after the printing of the turn-over item is directly and automatically adjusted from the turn-over credit column to the fresh balance-debit column.

This is thereby attained that the gear for the jumping or jumping over of the carriage is brought into dependency on the known circulation feeding of the balancing or transverse mechanism.

To explain the invention, it is first necessary to explain the special change-over gear for the carriage, which effects that the carriage jumps

only stepwise from stop to stop of the carriage rail or can jump over any predetermined columns. This gear is illustrated in Figs. 1 to 4.

Fig. 1 shows an elevation of the gear element pre-adjusted by the horizontal motor key in the normal position of the carriage,

Fig. 2 shows the jumping position of the carriage, whereas

Fig. 3 shows the normal position,

Fig. 4 shows in jumping position the same gear in conjunction with the additional locking gear at the actuation of the jumping over motor key,

Figs. 5-7 show in top plan view this gear in different positions,

Figs. 8-12 illustrate control elements which prevent further jumping of the carriage after it has jumped over a certain number of columns, whereas

Figs. 13 and 14 illustrate the special control elements for the jumping feeding of the carriage from the turn-over column into the coordinated balance-column in spite of the actuation of the horizontal key.

#### I. Step-feeding of the carriage by actuation of the horizontal motor key H

As shown in Figs. 1 and 2, the stop bar 1 fixed on the carriage carries the stops 2. In the inoperative position the carriage is retained by a tappet 3 bearing on the stops 2. This tappet is mounted on a lever 5 oscillatable about a pin 4. The lever 5 is directly controlled, in a known manner, from the horizontal motor key H and in such a manner, that at the next following calculating operation of the machine it is lifted about pin 4 into the position shown in Fig. 2. The actuation of the lever 5 at the calculating movement of the machine can be effected for instance by a bar 8 through the intermediary of an eccentric disc 7, which first oscillates in the direction of the arrow the pawl 8 which is resiliently suspended on lever 5, without actuating the lever 5; during the return movement a projection 9 of the eccentric disc lifts pawl 8 and thereby the lever 5 as shown in Fig. 2. The carriage then jumps by one step up to the next stop 2'. In the meantime the lever 5 has dropped back from the position shown in Fig. 2 into its inoperative position Fig. 1 owing to the rotation of the eccentric disc 7.

#### II. Carriage feeding by several steps by actuation of the jumping over motor key U

If the jumping over motor key U is depressed, the carriage has not to be stopped by its next stop after one step but must be able to jump on. As shown in Figs. 3 and 4 (compare also top plan views in Figs. 5 to 7), a special lever 11 oscillatable about a pin 10 is provided for this purpose above the lever 5. This lever 11 is oscillated at the depressing of the jumping over motor key into the position shown in Fig. 4 for instance by a bar 12. In the normal position an abutting face 13 of this lever is in front of the lever 15 oscillating about an axle 14 and locks this lever. In the oscillated position of the lever 11 shown in Fig. 4 the lever 15 is no longer locked but can freely oscillate about an axle 14. (Compare also Fig. 5, in which the gear consisting of levers 11 and 15 is shown in inoperative position, and Figs. 6 and 7 showing this gear in disengaged position). A lever 16 is mounted on the axle 14 of the lever 15. This lever 16 co-operates with a cam 17 fixed on the lever 5. If the lever

15 is liberated at the oscillation of lever 11 it oscillates until the lever 16 first bears on to the end face of cam 17. In this position the lever 5 is still in its inoperative position. If then the lever 5 is lifted by the gear 7-9, the lever system 15, 16 oscillates further under the action of a spring 18 (Figs. 5-7) until lever 16 comes to bear upon the face of lever 5 in front of the cylindrical face of cam 17 (Fig. 7). The lever 5 is thus held securely in its oscillated position (Fig. 2 or Fig. 4), so that the carriage can then jump on without hindrance until other control operations prevent it from jumping after a certain number of columns.

These control elements are shown in Figs. 8, 10 and 5.

On the control bar 1 a special cam 40 is mounted which, when sliding along nose 41 of a lever 42 pushes this lever towards the rear. Its rear side presses at the same time against a lever 43 loosely mounted on an axle 32 and turns this lever in the right hand direction (Fig. 8). A lever 38 fixed on the upper end of the axle 32 (Fig. 10) presses, during its oscillation, against the lever 16 and oscillates the levers 16 and 15 to the left (Fig. 10). At this oscillation cam 17 and lever 5 are again liberated, so that the tappet 3 comes again into the path of stop 2 and the carriage is therefore stopped at the next following stop. (Figs. 10 and 5.)

#### III. The carriage feeding from a turn-over column to a new balance-column

a. At preceding starting of the machine in turn-over-column by the pumping over motor key:

According to the invention the carriage has to be controlled so that it moves in dependency on the plus- or minus circular feeding of the balancing mechanism automatically and without special manipulation from a turn-over column directly into a fresh balance-column for debit or credit amounts. The driving mechanism serving herefor is illustrated in different views in Figs. 9-12.

If a circular feeding of the balancing mechanism occurs, a lever 21 mounted on axle 20 (circular feeding axle) is oscillated by rod 19 (Fig. 10), said lever 21 driving a bar 25 by means of a bar 22 through the intermediary of a bell crank lever 24 oscillatable about pin 23. This bar 25 is lowered when the circular feeding is negative. An axle 27 is lowered or lifted from bar 25 through the intermediary of an oscillatable lever 26 and thereby an arm 28 fixed on this axle is moved either into the position shown in full lines, for minus-balance, or into the position shown in dotted lines for plus-balance (Figs. 9 and 10). A projection 29 of the arm 28 is thereby brought either into the path of a roller 30 or of a roller 31 (Figs. 11 and 12, also 10 and A). The rollers 30 and 31 are mounted on the rail 1 for the carriage control (Fig. 10). If the arm 28 is in the path of the roller 30 or 31, it is oscillated, when the control bar 1 is shifted in the direction of the arrow in Fig. 11, into the position shown in Fig. 1. At this occasion it turns the axle 32 by means of the arm 33 fixed on this axle, and the pin 34 of this arm engages in the mouth 35. From the axle 32 (Fig. 10) an arm 36 is also oscillated (compare Fig. 10 and also Fig. 5). By the oscillation of arm 36 the angle crank lever 16 and 15 is lifted (Fig. 5). The locking of the lever 5 is thus unlocked, so that lever 5 drops back into the po-

sition shown in Fig. 1 and 3 and consequently the carriage is caught again when the next following stop strikes against the tappet 3. This is the same proceeding as that described under II last paragraph.

- b. The carriage feeding from the turn-over column into the fresh balance-column at preceding starting of the machine by the horizontal motor key.

In the preceding paragraph it has been explained, how the locking of the lever 5 carrying the tappet 3 in the inoperative position, which had taken place at actuation of the jumping motor key, is unlocked indirectly from the circular feeding of the balancing mechanism so that the carriage is intercepted from a turn-over column after the actual plus- or minus-circular feeding of the balancing mechanism in the co-ordinated balance column.

This supposes that the turn-overs, for accurate automatic selection of the balance-column, ought to be booked by means of the jumping-over key. If, however, erroneously the horizontal key had been depressed in the turn-over columns, the carriage would jump only one step as described in the section I, that is the selection of a balance column could not be carried out in dependency on the positive or negative circular feeding. To avoid this defect, a separate control shaft 44 is provided on the control bar 1 for each of the turn-over columns (Figs. 13, 14 and A) which control shaft causes the same effect as the jumping-over key, namely pulls back the lever 11, 13 in order that lever 5 after the feeding

has taken place can be securely held in the inoperative position.

The control elements which are necessary here-fore are partly situated in front of those of Fig. 10 and are shown in Figs. 13 and 14.

An arm 38 oscillatable about an axle 37 is oscillated in the right hand direction by means of roller 44, ratchet 45, lever 46 and axle 37 when the carriage moves over to the turn-over column. This arm lifts, at this oscillating movement, the lever 11, by means of a pin 38 fixed on this lever against which pin the arm bears, whereby the locking of the lever 5 in its inoperative position (tappet 3 out of engagement with the path of the stops 2) is caused; this locking being then unlocked again as described in the preceding paragraph indirectly by the circular feeding of the balance-mechanism by means of roller 30, 31, lever 26, pin 34, axle 32 and lever 36, so that the lever 5 and the tappet 3 drop back into their effective position and stop the carriage in the fresh co-ordinated debit- or credit-column. The same proceeding as if the jumping over motor key had been depressed is therefore obtained.

The lifting and lowering of the bar 25 or the oscillation of the circular feeding shaft 20 in dependency on the circular feeding can be effected directly from this circular feeding, or better indirectly in that by the circular feeding a pre-tensioned spring mechanism F' is disengaged (Fig. 10), which in turn at the releasing carries out the circular feeding and the operations depending on the same.

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