

June 23, 1942.

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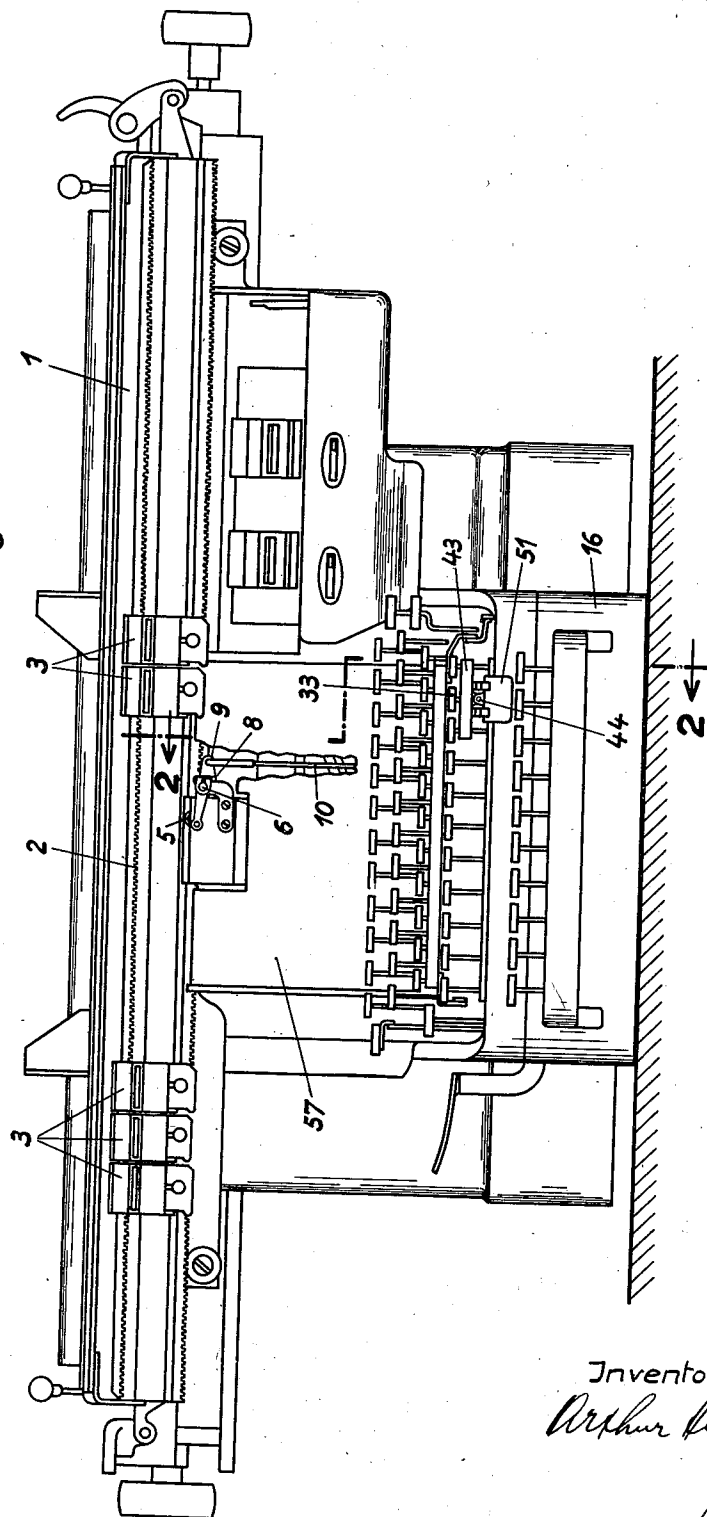
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CALCULATING TYPING MACHINE WITH A MOTOR DRIVE

Filed March 17, 1938

3 Sheets-Sheet 1

Fig. 1



Inventor
Arthur Hediger

June 23, 1942.

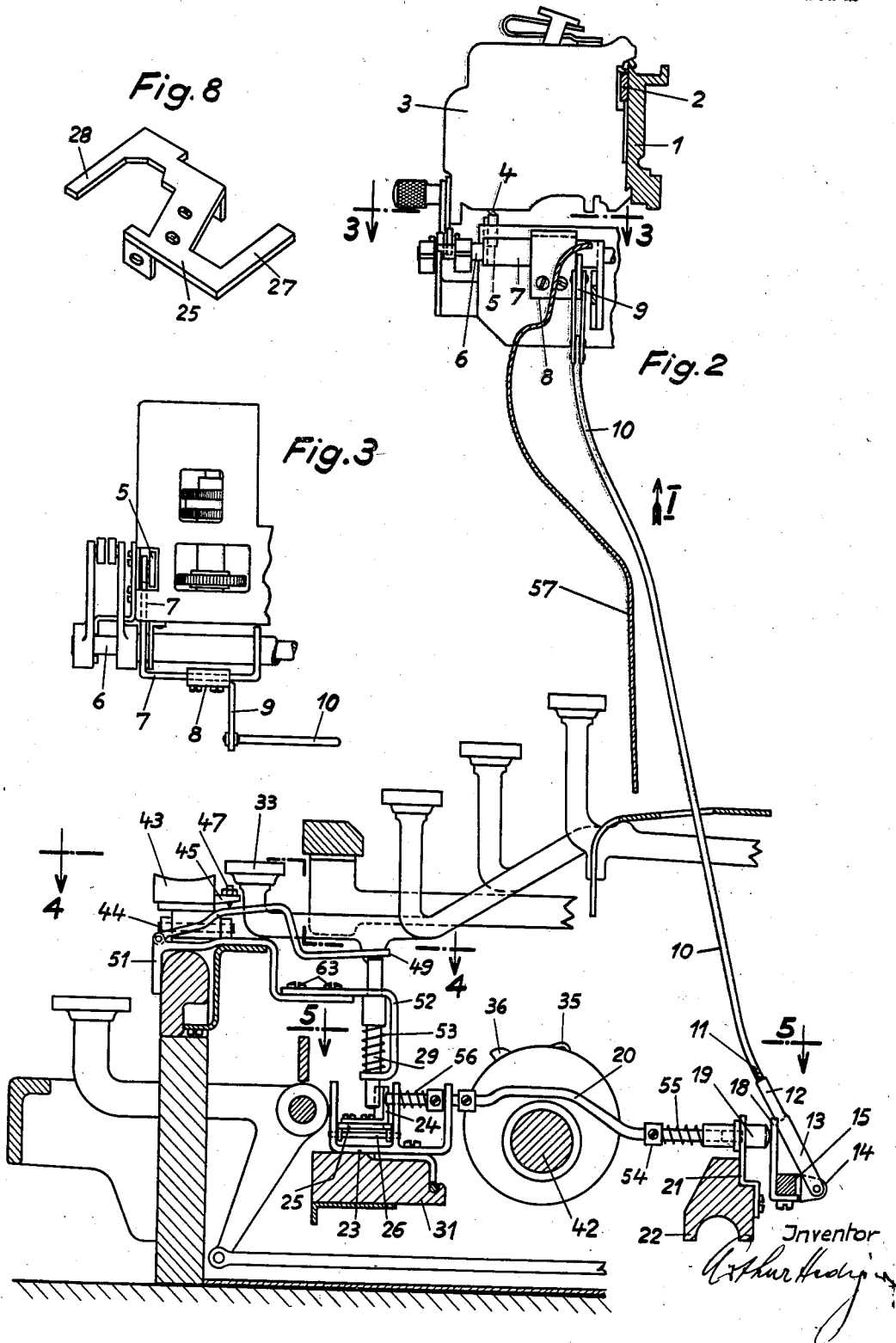
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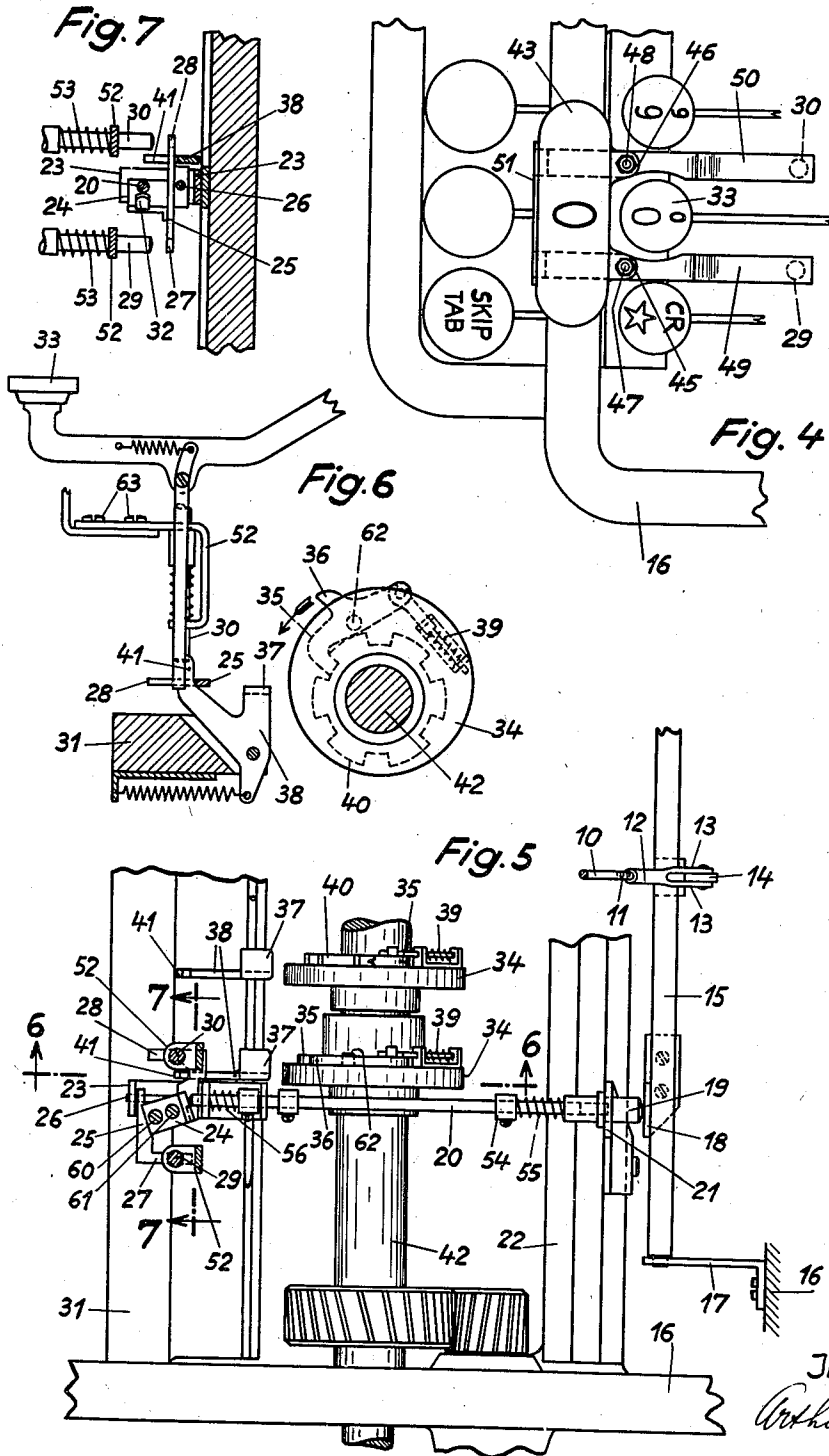
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UNITED STATES PATENT OFFICE

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CALCULATING TYPING MACHINE WITH A
MOTOR DRIVE

Arthur Hediger, Zurich, Switzerland

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8 Claims. (Cl. 197—17)

The subject of the present invention is a calculating typing machine with a motor drive, for example a machine with a plurality of vertical totalizers and a transverse totalizer. Such machines in addition to the usual keyboard, which also includes keys adapted solely for typing the numerals 0-9 are also provided with a set of calculating keys for the numerals 0-9. These keys are located in a row below the typing keys. In front of them are arranged the decimal tabulator keys. A suitable number of vertical totalizers may be arranged in the known manner on a transverse bar of the typewriter carriage. When depressing the calculating keys they are actuated simultaneously with the corresponding writing type.

In such machines when typing numbers with a plurality of zeros it was necessary to strike each one of these. When typing the number 1,000,000 the calculating key "0" had to be struck six times. The object of the invention is to effect this automatically. The invention enables the typing of a figure terminating in a number of zeros to be completed automatically, as also the direct typing of a suitable number of zeros by actuating a single separately provided key.

Arrangements serving for the same purpose are known in connection with adding machines having a complete keyboard. But hitherto it was not possible to solve this problem in connection with calculating typewriters.

An example of construction of the subject of the invention mounted on a known Remington electric bookkeeping machine is shown in the accompanying drawings, wherein

Fig. 1 shows the machine in front elevation.

Fig. 2 shows a section on the line 2-2 of Fig. 1.

Figs. 3, 4 and 5 are sections on the lines 3-3, 4-4, and 5-5 respectively of Fig. 2.

Figs. 6 and 7 are sections on the lines 6-6 and 7-7 respectively of Fig. 5.

Fig. 8 shows a detail in perspective.

In the drawings only those parts of the machine are shown which are necessary for the understanding of the invention. Thus for example the whole of the usual electrical driving mechanism is omitted.

To the carriage 1 (Fig. 1) is secured the toothed rack 2, known per se, on which are suitably mounted the totalizers 3, i. e. in accordance with the columns to be typed of the account sheet, not shown in the drawings, engaged in the machine. To the casing of each totalizer 3 is secured a bar 4 which can run on a suitably arranged roller 5

and thus depress this. The roller 5 is arranged for free rotation on the safety arm 7 pivotally mounted on the shaft 6 and appertaining to the transverse totalizer (balance and control mechanism). The above parts are already provided on known electrical Remington calculating typewriters.

To the arm 7 is secured a carrier 8 which is provided with a downwardly extending part 9. To the latter is attached a downwardly extending pull wire 10 of which the lower end is provided with a screwed end 11 and is screwed into a bush 12. The bush 12 is forked at 13 and is pivotally connected to a support 14. The support 14 is secured to a shaft 15 which is rotatably mounted in the typewriter sub-base 16 in bearings 17. 57 is an actuator front cover which encloses both the upper part of the pull wire 10 and also the known parts of the machine located behind this. To the shaft 15 is secured a plate 18 against which bears a hollow sleeve 19 into which projects the end of a push rod 20, whilst between the end of the push rod 20 and the bottom of the sleeve an intermediate space is left free. The sleeve 19 is mounted for axial movement in a support 21. The latter is rigidly connected to a power unit latch frame 22 already existing in the sub-base 16. The other end of the push rod 20 is mounted in a bearing block 23 and bears against an angle member 24 (Figs. 2, 5, 7) firmly screwed to the carrier 25 by means of screws 60, 61. The carrier 25 is S-shaped in plan and is pivotally mounted on a horizontally located pivot pin 26, mounted in the bearing block 23, and it is provided with two arms 27, 28 (Figs. 5 to 7) above each of which there is located a bolt 29, 30 whilst maintaining a predetermined spacing (Figs. 2, 5, 7). The bearing block 23 is secured to a further latch frame 31 provided in the sub-base 16. In the angular member 24 there is provided a recess 32 (Fig. 7) with which there co-operates the push rod 20 in the manner hereinafter described.

Adjacent the push rod 20 there is located the cam 34 (Figs. 5, 7) located as usual to the extreme right and actuated by the key 33 of the row of numeral keys, which is used for typing the zeros. As known a cam of this character is provided for each numeral key. On each cam there is pivotally mounted on a shaft 62 a pawl 35. The nose 36 of the pawl 35 can strike against a horizontally located lug 37 of a power unit latch 38 as soon as it is in the position of rest. The pawl 35 is subjected to the action of a spring 39 and serves in the known manner for

coupling the cam with the corresponding ratchet 40. The power unit latch or stop 38, subjected to the action of the zero key 33 (Fig. 6) and located to the extreme right, now projects with its vertical nose 41 also into the path of actuation of the rocking pawl 35. All the cams 34 are mounted on the shaft 42 located in the sub-base 16. The parts 33-42 are all present in every machine.

Between the row of numeral keys 33 and the row of tabulator keys 64 there is located directly in front of the zero key 33 a rocking member 43 which is to be actuated when automatically typing zeroes. The rocking member 43 is pivotally mounted at its longitudinal centre on a horizontal rearwardly extending pivot pin 44 and carries two projections 45, 46 in which are provided pins 47, 48 adjustable in an axial direction. The pin 47 rests on a lever 49 and the pin 48 on a lever 50, which are both pivotally mounted in a bearing plate 51. The lever 49 bears with its free end on the bolt 29 and the lever 50 on the bolt 30 (Figs. 2, 4). Each bolt 29, 30 is guided for vertical movement in a column 52 and is held by a spring 53 in its upper end position (Fig. 2). Both columns 52 are rigidly connected by screws 63 to the bearing plate 51. As above described the ends of the pawls 29, 30 are located above the ends of the arms 27, 28 of the carrier 25.

The method of operation of the machine is as follows.

As described above there are provided at the points of the rack 2, corresponding with the columns of the account sheet, the totalizers 3 of which the width corresponds accurately with the width of the columns and the number with the number of columns on the sheet to be typed. This arrangement is well known and has already been used. There is also known the provision of the safety arm 7 and the bar 4 co-operating therewith, on the totalizer 3. This bar 4 presses against the roller 5 and thus rocks the safety arm 7 about its pivot 6 as long as a totalizer 3 is located above the roller 5. As soon as the carriage 1 with the totalizer 3 is moved further, the roller 5 is released and the arm 7 can return into its initial position under the action of an existing spring provided on known Remington machines but not shown in the drawings.

When typing a single zero in a number the above improvement is not used but it is typed by striking the known zero key 33 as hitherto usual. When however there is to be typed a number containing a number of zeros for example 1,000,000, the corresponding tabulator key 64 is depressed, whereby the carriage 1 with the totalizers 3 moves into the correct initial position. The bar 4 thus presses the roller 5 downwardly as a result of which the safety arm 7 is rocked in a counter-clockwise direction (Fig. 1) and the part 9 of the carrier 8, secured thereto, pulls the pull wire 10 upwardly (direction of arrow I, Fig. 2). The shaft 15 is then also rocked in a counter-clockwise direction so that the plate 18 provided thereon is rocked outwardly and moves the sleeve 19 towards the left (Fig. 2). The left hand end of the push rod 20 bears as above described against the angular member 24. The push rod 20 is thus not moved when rocking the plate 18. There is solely compressed the spring 55 located between the sleeve 19 and a setting ring 54 fixedly mounted on the push rod 20. The last mentioned parts are moved each

time and held in this new position whenever a totalizer passes over the roller 5.

When the number 1,000,000 is to be typed, then after the carriage 1, by depressing the corresponding tabulator key, has been brought into the correct starting position, there is first typed as usual the number 1 and thereupon the left-hand half of the rocking member 43 is depressed. As a result the pin 48 rocks the lever 50, which in turn depresses with its free end the bolt 30 against the action of the spring 53 until after meeting the arm 28 it rocks the carrier 25 with the angle member 24 about the pivot pin 26. As a result the recess 32 in the angle member 24 is moved to such an extent that the end of the push rod 20 snaps into this. The latter is moved axially by the tensioned spring 55. When the rocking member 43 is released the parts 30, 50, 43 again return into the initial position shown. The carrier 25 however remains in the new position into which it has been rocked. During this movement it has rocked the power unit latch 38 about its pivot so that the cam 34 adapted to produce the zeros, can turn freely as the nose 36 of its pawl 35 is no longer held by the power unit latch 38. There now occurs the known action. Zeros are typed electrically as long as the power unit latch 38 is held in the position into which it has been rocked. This condition obtains until the bar 4 of the totalizer 3 passes off the roller 5. At this moment the parts 7 to 15 and 18 to 20 return into the initial position shown, i. e. the end of the push rod 20 leaves the notch 32, whereby the power unit latch 38 subjected to the action of a spring can return into its position of rest whilst simultaneously rocking the carrier 25 into its horizontal position. The corresponding cam 34 is again prevented from making a complete revolution and the typing of the zeros ceases.

From the foregoing it will be seen that a short pressure on the left-hand half of the rocking member 43 suffices to type zeros electrically as long as the totalizer 3 is over the roller 5.

The arrangement described can also be used for the purpose of typing a suitable number of zeros within a number. When for example there is typed the number 330,000.50, the left-hand half of the rocking member is pressed at the first zero. The new arrangement commences as above described to type the zeros. After the fourth zero the right-hand half of the rocking member 43 is depressed and the number 5 is then typed. By depressing the right-hand half of the rocking member the bolt 29 is moved downwardly, against the action of its spring 53 through the lever 49. The bolt 29 strikes against the arm 27 and thus rocks the carrier 25 back into its horizontal position. The power unit latch 38 returns into its normal position and thus locks the zero cam 34. No further zeros are thus typed. During the last rocking movement of the carrier 25 with the angle member 24 the end of the push rod 20 was pressed out of the groove 32 by the action of the spring 55 and was thus moved through a short distance towards the right (Fig. 2). The second spring 56 on the push rod 20 serves solely for equalizing the pressure. It is weaker than the spring 55. It may arise that the left-hand half of the rocking member 43 is depressed erroneously. The result would be that zeros would be typed up to the end of the column. In order to prevent this the right-hand half is depressed whereupon,

as just described, the typing of the zeros ceases immediately.

I claim:

In calculating typewriters, which include a motor driven shaft, a carriage, a bar movable with the carriage, a zero type lever, a zero key, a cam on said shaft for actuating said type lever, latching means for connecting said cam and shaft to rotate together and means operable by said zero key for controlling said latching means to connect said cam and shaft to rotate together; the combination with the aforesaid structure of means cooperating with said bar for maintaining said controlling means in its key-operated position and thereby effecting a continued action of said zero type lever after the zero key has been initially depressed and so long as said bar is in a predetermined position.

2. In a calculating typewriting machine of the motor driven type, a zero type lever, a movable carriage having a bar, a motor driven shaft, a zero cam loose on said shaft for use in operating said zero type lever, a ratchet and latch means for connecting said zero cam with said shaft to turn with the same, a pivoted lug normally operating to hold said latch disengaged from its ratchet and the cam at rest, a zero key and means operated by said key for withdrawing said lug to release said latch, combined with means controlled by the carriage bar and cooperative with said key operated means to hold the lug in the latch-release position so long as the carriage is in a given position.

3. In a calculating typewriting machine of the motor driven type, a movable carriage, a motor driven shaft, a zero type-bar operating cam loose on said shaft, a latch device for latching said cam and said shaft to turn together, a pivoted stop, and means causing said pivoted stop normally to engage said latch device to free the same from rotation with said shaft; combined with means to place and hold said pivoted stop in released position for a predetermined time, the placing and holding means including a rocking key means for placing the stop, and means controlled by the carriage for holding the stop in the released position.

4. In a calculating typewriting machine of the motor driven type, a movable carriage, a motor driven shaft, a zero type-bar operating cam loose on said shaft, a latch device for latching said cam and said shaft to turn together, a pivoted stop, and means causing said pivoted stop normally to engage said latch device to free the same from rotation with said shaft; combined with means to place and hold said pivoted stop in released position for a predetermined time, the placing and holding means including a rocking key means for placing the stop, means controlled by the carriage for holding the stop in the released position, and means cooperative with the rocking key means for releasing the pivoted stop from said holding means for return to its normal position at will.

5. In a calculating typewriting machine of the type having a movable carriage; a motor driven shaft, a zero type-bar actuating cam loose on said shaft, a cam latch to latch said cam to said shaft, a cam-latch releasing and holding stop, and means normally holding said stop in an active position; in combination with means for placing and holding said stop in its withdrawn position, said means comprising a carrier mounted to cooperate with said stop, a rocking key-member and operating connections between

said rocking key-member and said carrier for moving said carrier into position to withdraw said stop, and means governed by the position of the carriage for holding said carrier in its stop-withdrawing position for a predetermined time independently of but after actuation by said rocking key-member.

6. In a calculating typewriting machine of the type having a movable carriage; a motor driven shaft, a zero type-bar actuating cam loose on said shaft, a cam latch to latch said cam to said shaft, a cam-latch releasing and holding stop, and means normally holding said stop in an active position; in combination with means for placing and holding said stop in its withdrawn position, said means comprising a carrier mounted to cooperate with said stop, a rocking key-member and operating connections between said rocking key-member and said carrier for moving said carrier into position to withdraw said stop, a bar on the carriage, a fixedly located lever on the machine for engagement by said bar as the carriage passes the same, a rock shaft, a pull rod connection between said fixedly located lever and said rock shaft, a push rod device extending between said rock shaft and said carrier, an arm on said rock shaft to engage one end of said push rod device, and means on said carrier to receive the other end of said push rod device releasably to hold said carrier in its stop-withdrawing position.

7. In a calculating typewriting machine of the type having a movable carriage; a motor driven shaft, a zero type-bar actuating cam loose on said shaft, a cam latch to latch said cam to said shaft, a cam-latch releasing and holding stop, and means normally holding said stop in an active position; in combination with means for placing and holding said stop in its withdrawn position, said means comprising a carrier mounted to cooperate with said stop, a rocking key-member and operating connections between said rocking key-member and said carrier for moving said carrier into position to withdraw said stop, a bar on the carriage, a fixedly located lever on the machine for engagement by said bar as the carriage passes the same, a rock shaft, a pull rod connection between said fixedly located lever and said rock shaft, a push rod device extending between said rock shaft and said carrier, an arm on said rock shaft to engage one end of said push rod device, means on said carrier to receive the other end of said push rod device releasably to hold said carrier in its stop-withdrawing position, and means by virtue of which said rocking key-member may be used to effect the release of said carrier from said holding means to allow said stop to return to active position when desired.

8. In a calculating typewriting machine of the type having a movable carriage; a motor driven shaft, a zero type-bar actuating cam loose on said shaft, a cam latch to latch said cam to said shaft, a cam-latch releasing and holding stop, means normally holding said stop in an active position, in combination with means for placing and holding said stop in its withdrawn position, said means comprising a carrier mounted to cooperate with said stop, a rocking key-member and operating connections between said rocking key-member and said carrier for moving said carrier into position to withdraw said stop, a bar on the carriage, a fixedly located lever on the machine for engagement by said bar as the carriage passes the same, a rock shaft, a pull rod

connection between said fixedly located lever and said rock shaft, a push rod device extending between said rock shaft and said carrier, an arm on said rock shaft to engage one end of said push rod device, a member on said carrier having a slotted portion to receive the other end of said push rod device releasably to hold said carrier in its stop-withdrawing position, said member also having a non-slotted portion adjacent said slotted portion, said push rod device including a

push rod and a telescopic spring-loaded push button on one end of said push rod, and means by virtue of which when the other end of said push rod device is received in the slotted portion of said carrier member to hold the carrier in its stop-withdrawing position the rocking key-member may be operated to bring the non-slotted portion against the push rod device and release said carrier from its stop-withdrawing position.

ARTHUR HEDIGER.