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2,801,048

PAPER FEEDING SUPPRESSION MECHANISM FOR CALCULATING MACHINES

Filed May 18, 1954

3 Sheets-Sheet 1

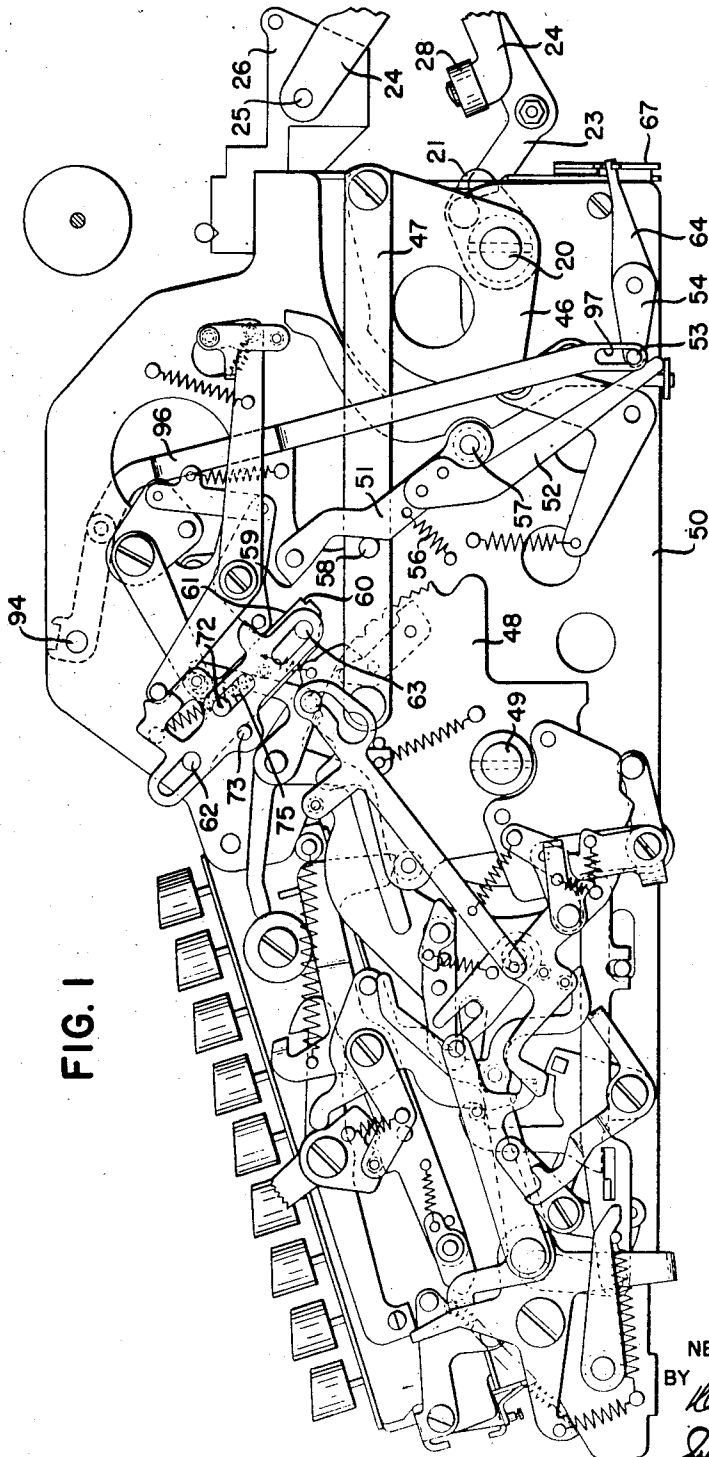


FIG. 1

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FIG. 3

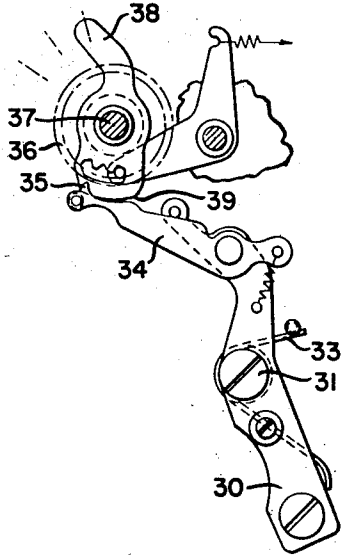
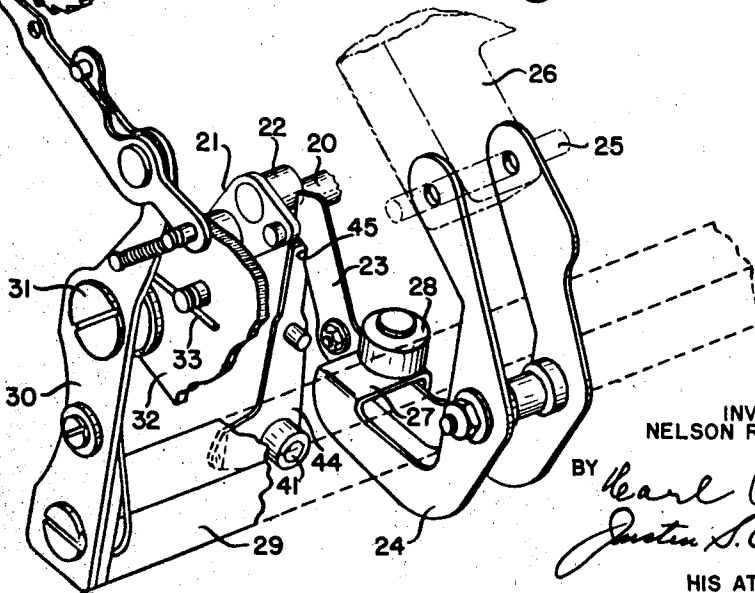
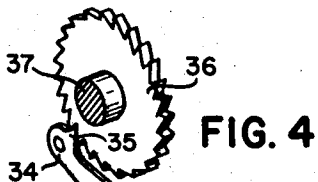
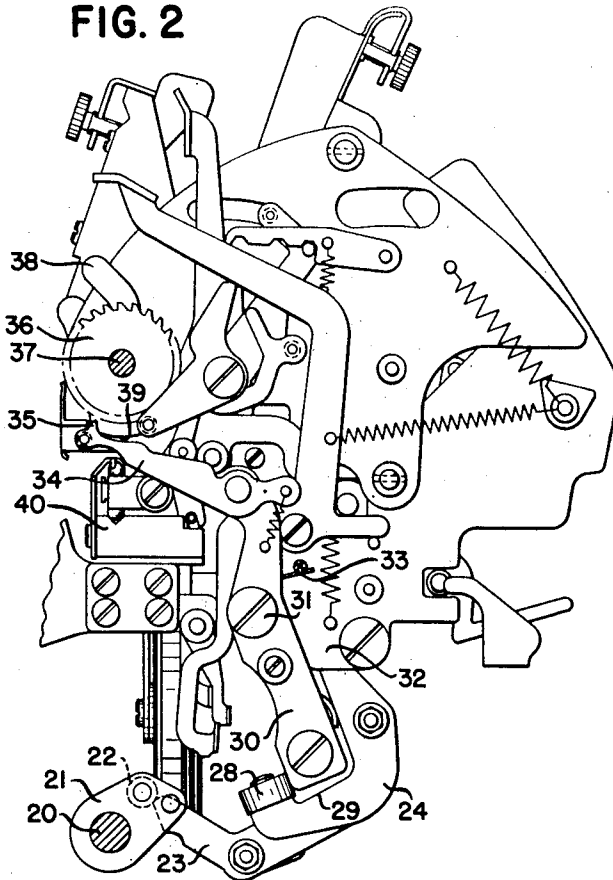


FIG. 2



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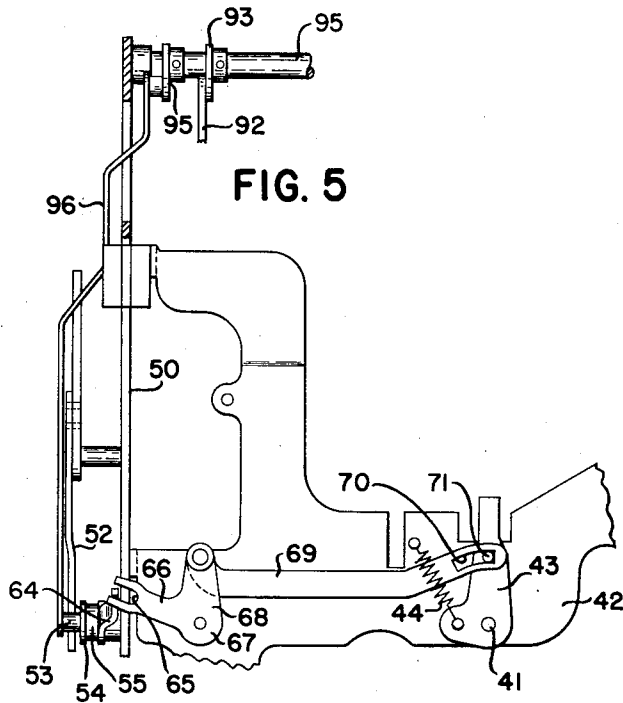


FIG. 5

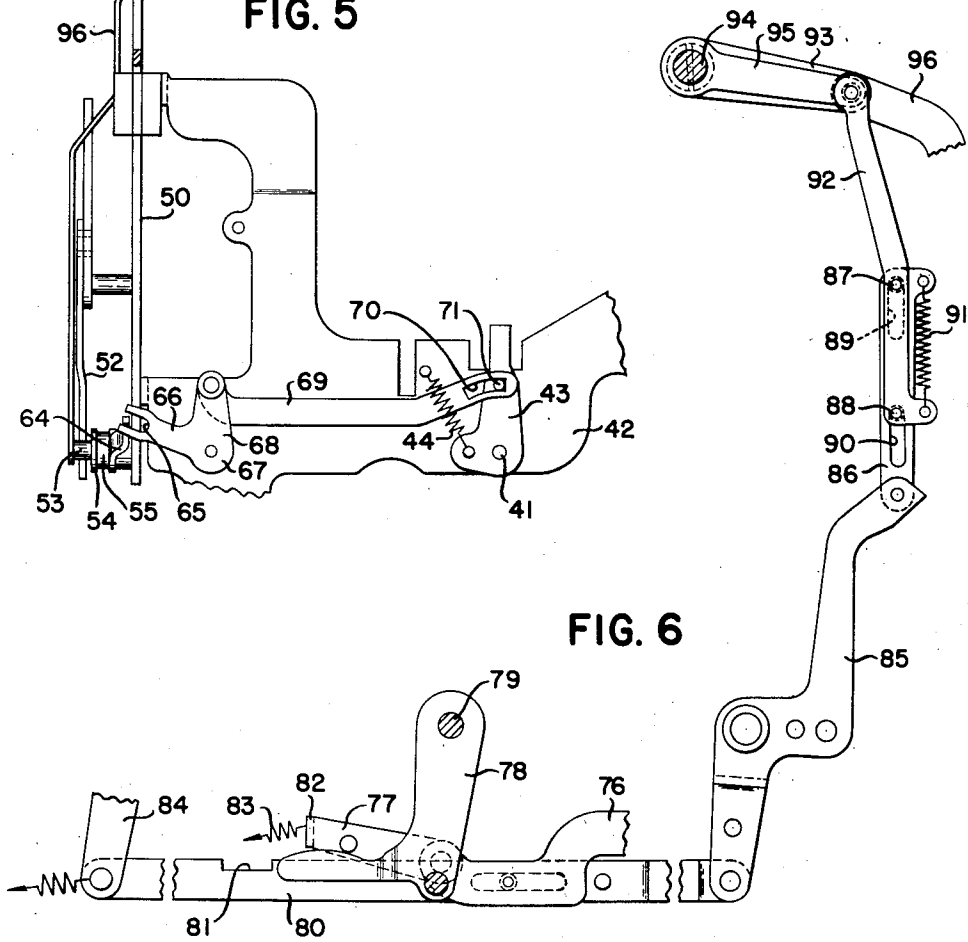


FIG. 6

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PAPER FEEDING SUPPRESSION MECHANISM FOR CALCULATING MACHINES

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Application May 18, 1954, Serial No. 430,482

1 Claim. (Cl. 235—60.51)

This invention relates to a paper feeding device for a calculating machine and particularly pertains to means to suppress a paper feed on the first cycle of a two-cycle total-taking or sub-total-taking operation in a machine that normally feeds record material one space each machine cycle.

The machine in which this mechanism is shown embodied is of the type disclosed in the application for United States Letters Patent Serial No. 412,302, filed by this applicant, Nelson R. Frieberg, and Oscar F. Larsen on February 24, 1954.

It is an object of this invention to provide, in a calculating machine having single-cycle item-entry operations, two-cycle total-taking operations, and mechanism for feeding paper one space on each cycle of operation, mechanism whereby the paper-feeding mechanism is suppressed on the first cycle of a total-taking operation, so that the printed total will appear one space beneath the last printed item entry instead of two spaces therefrom.

With this and incidental objects in view, the invention includes certain novel features of construction and combinations of parts, a preferred form or embodiment of which is hereinafter described with reference to the drawings which accompany and form a part of this specification.

Of the drawings:

Fig. 1 is a view of the right side mechanism of the machine with the carriage removed.

Fig. 2 is a right end elevation of the paper carriage, showing the paper-feeding mechanism.

Fig. 3 is a detail of the paper feed bail and pawls.

Fig. 4 is a perspective of part of the mechanism of Figs. 2 and 3.

Fig. 5 is a rear elevation of the paper feed suppressing mechanism.

Fig. 6 is a right side elevation of the total-taking control linkage which disables the suppressing mechanism of Fig. 5.

In the machine of the type shown in the beforementioned Frieberg et al. application, the rear drive shaft 20 (Fig. 1) rocks first counter-clockwise and then clockwise during a machine cycle of operation. On this drive shaft 20 is an arm 21 (see also Figs. 2 and 4), having a stud 22, which normally rests against the end of an arm 23 of a bracket formed by the arm 23 and an arm 24, pivoted on a pin 25, supported in a rearwardly-extending portion 26 of the machine. The free end of the arm 24 is bent over and bolted to the arm 23 to form a bearing surface 27, on which is mounted a roller 28, which bears against the forward surface of a paper feed bail 29 supported by an arm 30 pivoted by a screw stud 31 to the right frame plate 32 of the paper carriage. The left end of the feed bail is supported in a similar manner. A spring 33, wound around the stud 31, has one end resting against a stud on the frame plate 32 and its other end resting on the arm 30, so as to urge the feed bail to rock toward the roller 28. When the machine is at rest, the parts are positioned as shown in Fig. 2, with the stud 22 holding the arm

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23 and, through the roller 28, the bail 29 rocked in a counter-clockwise direction. As the machine goes through a cycle of operation, the stud 22 moves away from the arm 23, allowing the feed bail to rock first clockwise and then counter-clockwise around the center of the stud 31.

Pivoted to the upper end of the arm 30 is a platen feed pawl 34 (Figs. 3 and 4) having a tooth 35 adapted to cooperate with a ratchet wheel 36 secured to a platen support shaft 37. Rocking of the feed bail will turn the platen a step, the distance being controlled by the position of a lever 38, which, through a cam edge 39, controls the timing of the engagement of the pawl 34 with the wheel 36.

The paper carriage is formed of the right side plate 32 (Fig. 2), a similar left side plate, and various cross bars and shafts, and is mounted for cross-tabulating movement by bearings on a support member 40 and another support, not shown. By the construction shown, which is disclosed in more detail in the Frieberg et al. application to which reference has been made, the feed bail 29 is rocked, unless prevented, on each machine operation, regardless of the lateral position of the carriage.

Pivoted on a stud 41 (Fig. 5) on a back frame piece 42 of the machine is a lever 43, normally held in the position shown by a spring 44, where the upper end engages a notch 45 in the arm 23. If this condition prevails during a cycle of machine operation, the paper-holding platen will not be given the feeding movement.

During item-entering single-cycle operations of the machine, the lever 43 is rocked counter-clockwise, as shown in Fig. 5, unblocking the platen feed bail, by means next to be described.

Referring to Fig. 1, as before stated, the shaft 20 rocks first counter-clockwise and then clockwise during a machine cycle. A plate 46, attached thereto, rocks likewise, pushing a link 47, pivoted thereto, first to the left and then to the right as seen in Fig. 1. The forward end of the link 47 is pivoted to a plate 48 secured to a cross shaft 49, which, also, is rocked first counter-clockwise and then clockwise during the cycle. Pivoted to the right side frame plate 50 is a lever 51 having a downwardly- and rearwardly-extending leg 52 bearing against a stud 53 on an arm 54 secured to a hub 55 (see also Fig. 5) pivoted on the right frame plate 50. The lever 51 (Fig. 1) is urged counter-clockwise on its pivot 57 by a spring 56 but is retained in the position shown by a stud 58 on the link 47. As the link 47 moves to the left, as seen in Fig. 1, at the commencement of an item-entering machine cycle, the lever 51 rocks counter-clockwise until its nose 59 comes to rest in a notch 60 in a total slide 61, mounted for downward and rearward movement on studs 62 and 63. Thus the total slide is latched during item-entering cycles of operation in the position shown in Fig. 1. As the lever 51 rocks counter-clockwise, the leg 52 rocks the arm 54 clockwise. An arm 64, attached to the hub 55 (Fig. 5), has its rear end positioned in the fork 65 in the arm 66 of a bell crank lever 67, pivoted to the frame piece 42. The other arm 68 of the bell crank lever 67 has pivoted thereto a link 69, the other end of which has a slot 70, in which rides a stud 71, secured on the lever 43. The clockwise movement of the arm 64 (Fig. 1) rocks the lever 67 (Fig. 5) counter-clockwise, consequently rocking the lever 43 counter-clockwise to a position where it does not block the arm 23 (Fig. 4). Thus the feed bail 29 moves in a paper-feeding movement on each item-entering machine cycle.

As mentioned before, the total-taking and sub-total-taking operations are two-cycle operations. Such are initiated by keys, not shown here but shown in the Frieberg et al. application before mentioned. A total key, when operated, bears down on a stud 72 on the total slide 61, moving it downwardly and rearwardly to a point

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where the nose 59 cannot move into the notch 60 but hits the rear edge of the total slide, such movement not being sufficient to move the arms 54 and 64 a sufficient distance to move the lever 43 (Fig. 5) out of blocking position. The sub-total key, when operated, bears down on a stud 73 on a sub-total slide 74, moving it downwardly and rearwardly, carrying the total slide 61 with it, with the same result on lever 51. The total slide stud 72 extends into a slot 75 of the sub-total slide to couple the two slides together in sub-total slide movements.

Unless something else were provided, there would be no paper feed in either cycle of a total-taking operation or a sub-total-taking operation. To overcome this situation, advantage is taken of the movement of the link that controls the totalizer-engaging mechanism, which occurs in the last half of the first cycle and which persists during the paper-feeding time in the second cycle. Through means, not necessary to describe here but shown in the mentioned Frieberg et al. application, a slide 76 (Fig. 6) is moved first to the left and then to the right each machine cycle. Pivoted to its front end is a latch 77, normally held ineffective, as shown in Fig. 6. In total-taking and sub-total-taking operations, a bell crank lever 78, pivoted to the machine frame, is rocked counter-clockwise at the initiation of the first cycle, allowing the latch 77 to drop to where it rests on the top edge of a total link 80, which has a notch 81 thereon. At mid-cycle, the slide 76 has moved completely forward, and an ear 82 on the latch 77, carried thereby, has dropped into the notch 81 under the urge of a spring 83, and, on return movement of the slide 76 in the last half of the first machine cycle, the total link 80 is moved to the right. The total link 80 is pivoted to a swinging support 84 at its front end and is pivoted to a total bell crank lever 85, pivoted to the right frame, at its rear end. The movement of the link 80 rocks the bell crank lever counter-clockwise as seen in Fig. 6, lifting up on a link 86, pivoted to its upper end. The link 86 is resiliently coupled, by pins 87 and 88, slots 89 and 90, and a spring 91, to a link 92, pivoted to an arm 93, pinned to a shaft 94, journaled in the machine frame. The shaft 94 is rocked counter-clockwise as seen in Figs. 1 and 6. Pinned to the shaft 94 is an arm 95 (see also Fig. 5), to which is pivoted a link 96, having in its lower end a slot 97 (Fig. 1), in which rides the stud 53 of the arm 54. Thus the rocking of the shaft 94 rocks the arm 54 in the same manner as the leg 52. This occurs in the last half of the first cycle of the two-cycle operations, and the rocked condition persists until after the feeding movement of the feed bail 29 in the second cycle.

Thus, there is but one feeding movement of the platen

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during total-taking and sub-total-taking operations, even though each type is a two-cycle operation.

While the form of mechanism shown and described herein 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 or embodiment disclosed herein, for it is susceptible of embodiment in various other forms.

What is claimed is:

- 10 In a machine of the class described having a cyclically-operable main operating means which performs one cycle of operation on item-entering operations and two cycles of operation on total-taking or sub-total-taking operations, the combination therewith of record material feed means
15 spring-urged in a feeding direction but normally held in a home position while the machine is at rest; blocking means normally blocking the feed means from movement, said feed means making a feeding excursion once each machine cycle if the blocking means has been moved to
20 ineffective position at the commencement of a machine cycle; control means operable to move the blocking means; a lever urged to move from a home position but held there by the main operating means while the machine is at rest, said lever being permitted to move to a full
25 extent during the first half of an item-entering machine cycle but returned to home position at the close of a machine cycle, and said lever, when moved to its full extent, operating the control means to move the blocking means to ineffective position; a total control means which
30 is moved to initiate a total-taking or a sub-total-taking two-cycle operation, said total control means, when moved, preventing the lever from moving its full extent, so that it will not operate the control means; and means
35 operated by the main operating mechanism in two-cycle operations to move the control means after the time for operation of the feed means in the first cycle, so that the feed means will make a feeding excursion during the second cycle of a two-cycle operation, whereby the record material will be fed once only on two-cycle machine
40 operations.

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