July 14, 1931. R. L. MULLER 1,814,178

PAPER CARRIAGE

Filed June 24, 1929 4 Sheets-Sheet 1

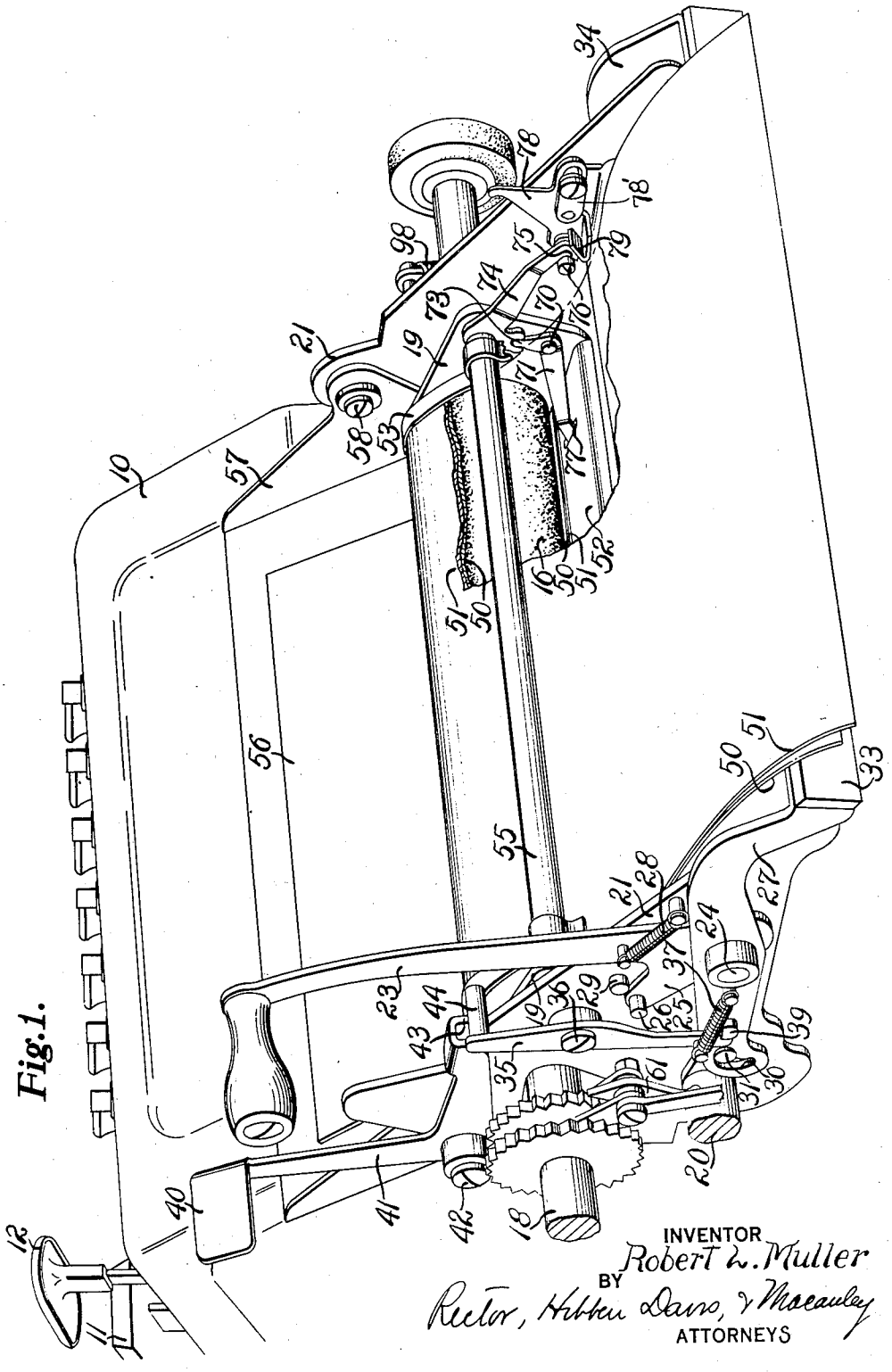


Fig. 1.

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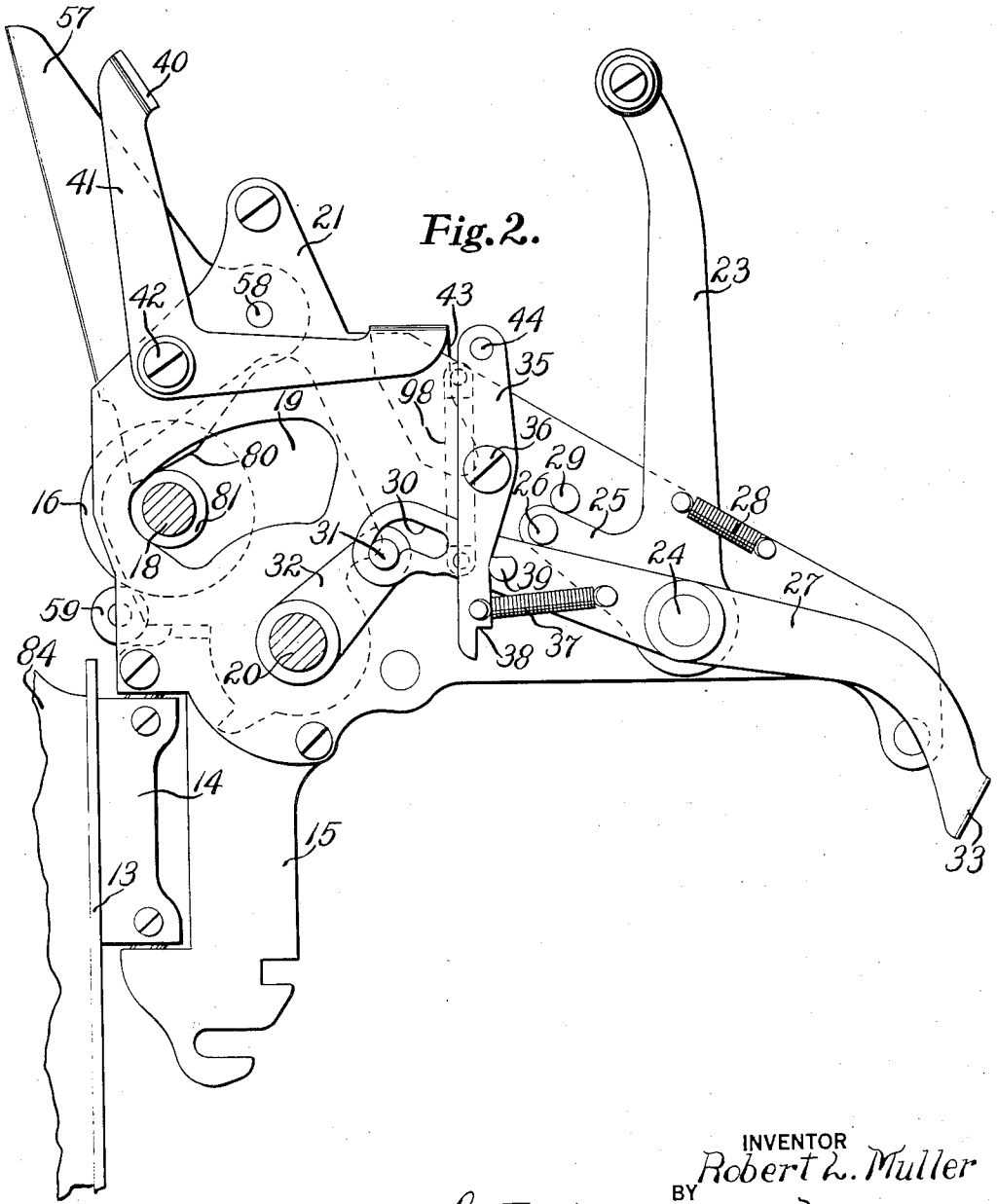


Fig. 2.

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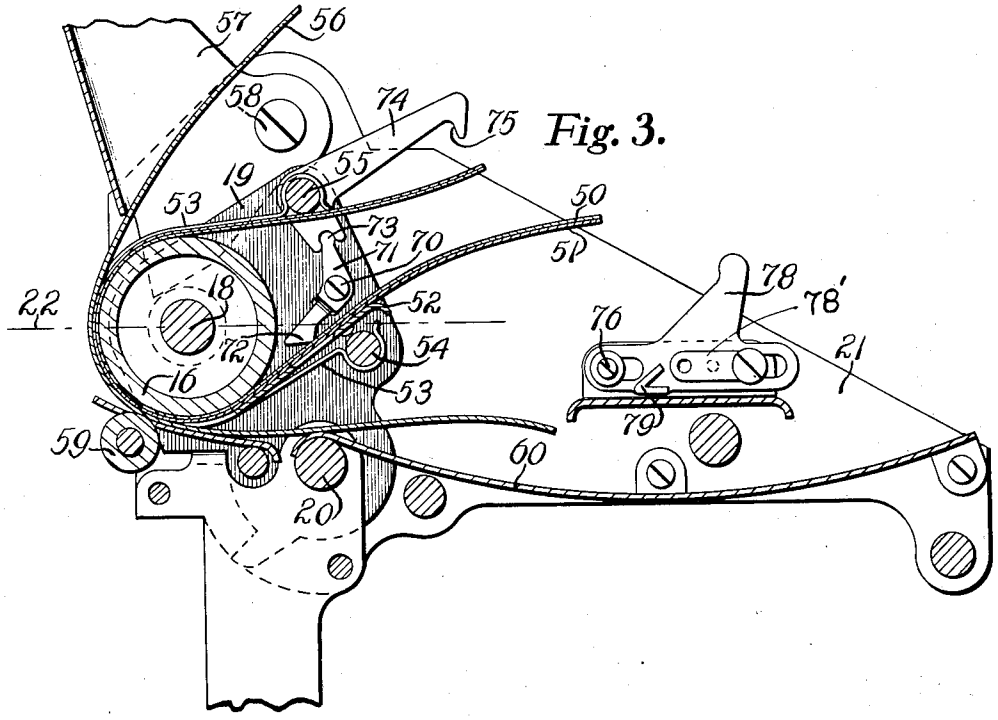


Fig. 3.

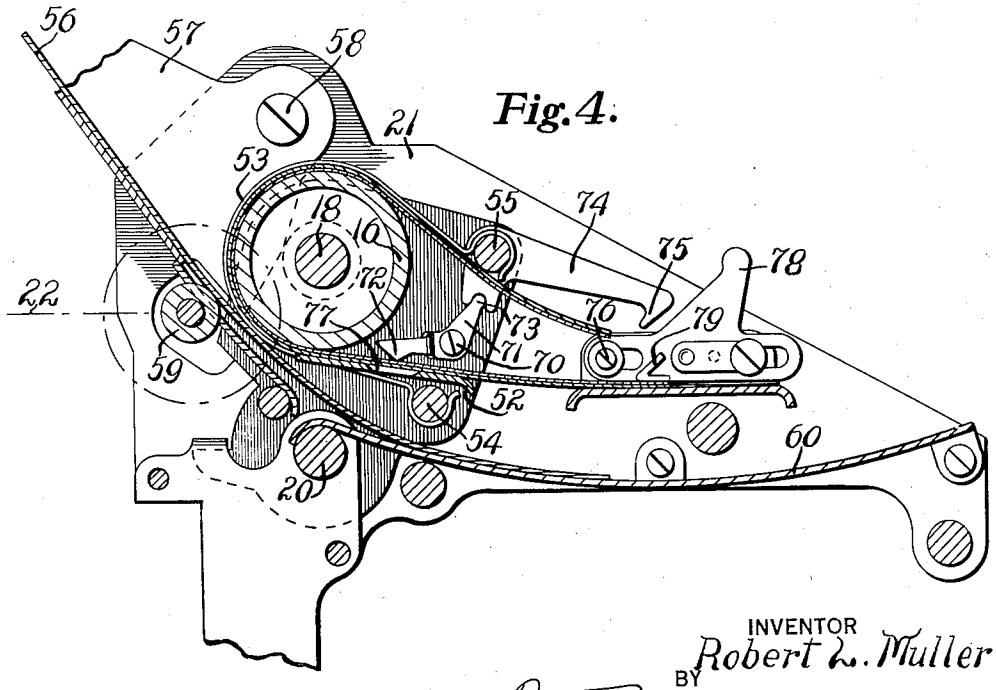


Fig. 4.

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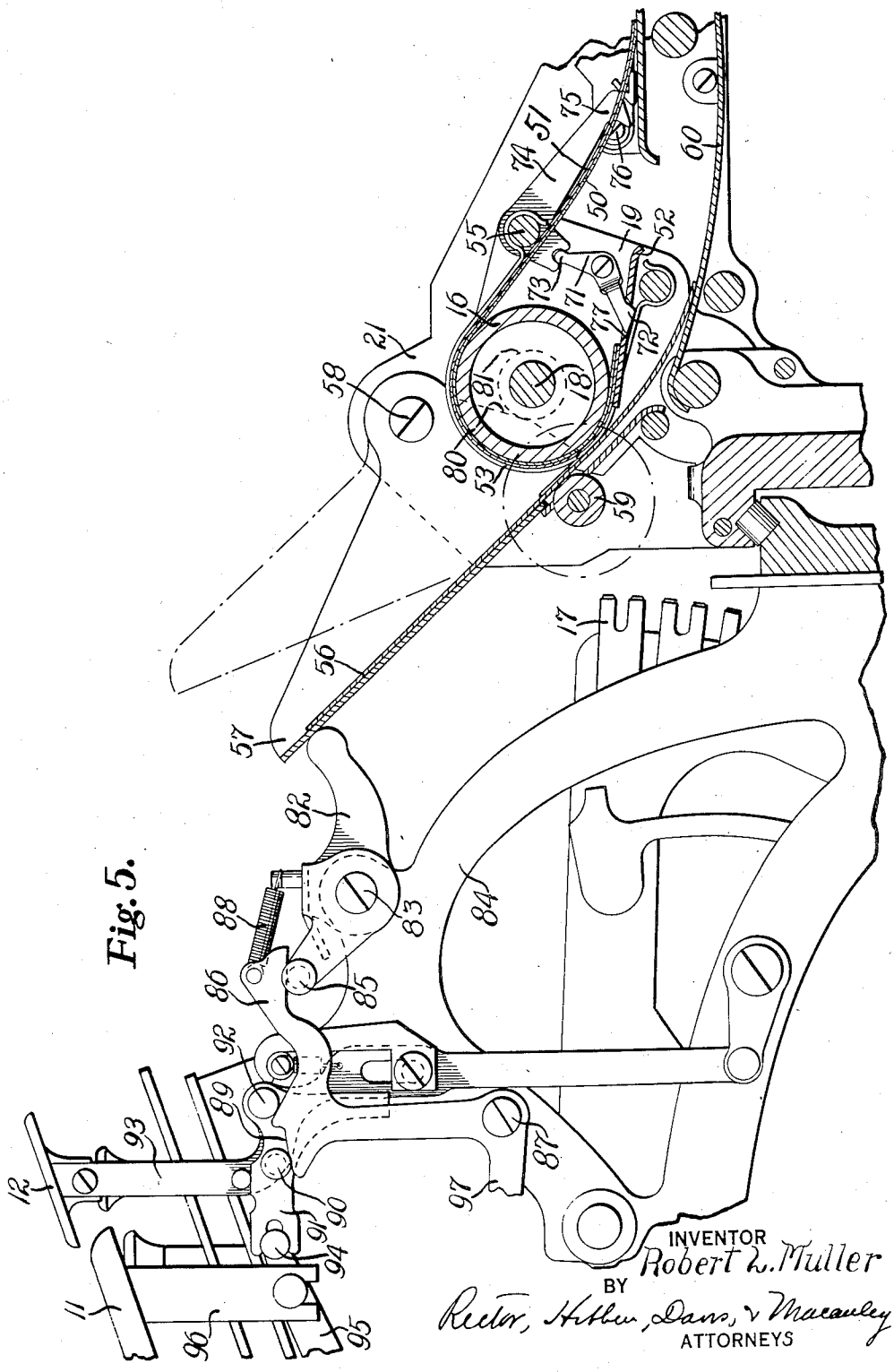


Fig. 5.

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UNITED STATES PATENT OFFICE

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PAPER CARRIAGE

Application filed June 24, 1929. Serial No. 373,170.

This invention relates to a paper carriage of the type used on accounting machines. It is directed to certain safety features for notifying an operator when the end of a sheet of paper has been reached, and it comprehends preventing the operator from operating the machine under such conditions. In order that the nature and purpose of the invention may be more clearly understood an example of work will be briefly described.

Paper carriages for accounting machines usually have a platen around which is positioned a journal or record sheet for keeping a record of all the items entered in the machine during a given run of work. Provision is also made for inserting and removing different ledger sheets on which items for individual customers are entered, the entries on all the ledger sheets being recorded on the journal sheet. After the operator puts the journal sheet in the machine he pays very little attention to it, his principal job thereafter being to insert ledger sheets and to make entries thereon. While the journal sheets are relatively long they are not of indefinite leng h, and at some period of the operations, the end of a journal sheet will be approached. It is rather difficult for an operator to tell when the end of the sheet is reached and, furthermore, it is very easy for him to forget about it because he is especially concerned with the ledger sheets. If the end of the journal sheet is reached before the operator discovers it a number of the entries on the ledger sheets may not be printed on the journal sheet with the result that the record is wrong. The present invention comprehends means for not only automatically notifying the operator when the end of the journal sheet has been reached or is approaching, but also mechanism for automatically preventing him from operating the machine. Mechanism is also provided for preventing the operator from moving the platen to printing position when the end of a sheet has been reached.

An object of the invention is, therefore, to provide an improved paper carriage having mechanism for automatically notifying an operator when the end of a sheet of paper has been reached.

Another object is to provide a paper carriage with mechanism for automatically preventing operation of the machine when the end of a sheet of paper has been reached.

Still another object is to provide a paper carriage having a platen which may be moved to and from printing position with mechanism for au omatically preventing the platen from being moved to printing position when the end of a sheet of paper has been reached.

Other objects and advantages of the invention will appear from the following specification and drawings.

An embodiment of the invention is shown in the accompanying drawings in which:

Fig. 1 is a perspective view of a paper carriage with the invention applied thereto, the platen of the carriage being shown out of printing position.

Fig. 2 is a partial side elevation and section illustrating the mechanism for moving the platen out of printing position, the platen being shown in its normal or printing position.

Fig. 3 is a partial sectional view of the carriage with the platen in printing position and with sheets of paper in the carriage, the ends of the sheets not having yet been reached.

Fig. 4 is a partial sectional side elevation similar to Fig. 3 with the platen moved out of printing position, the ends of none of the papers having yet been reached.

Fig. 5 is a partial right side elevation and section with the platen rocked out of printing position, the end of one paper having been reached. This view also shows the connections for locking a machine against operation.

The invention is shown applied to a Burroughs accounting machine, the operating mechanism of which is within the casing 10 shown in Fig. 1. This machine has the usual depressible starting bar 11 and a special key 12, both of which serve when depressed to cause an electric motor to give the machine a stroke of operation.

Mounted on the rear frame plate 13 of

the machine (Figs. 2 and 5) is a track 14 on which is mounted a traveling paper carriage 15 having a platen 16 around which papers may be passed and held in position to receive printing impressions from the type bars 17 shown in Fig. 5.

The platen 16 is carried by a shaft 18 journaled at its end in two side plates 19 pivoted on a shaft 20 which, in turn, is journaled in the side plates 21 of the carriage. The side plates 19 may be rocked from the position of Fig. 3 to that of Fig. 4 and vice versa to move the platen to and from printing position, the printing line being illustrated by the dot and dash line 22 of Figs. 3 and 4. The platen may be rocked to and from printing position by hand as illustrated in the present case or automatically as illustrated in the Trew Patent No. 1,723,668, August 6, 1929. The present invention can be used with both the hand and the automatically operated platen, but for the purpose of simplifying the present application the hand control has been illustrated.

A hand lever 23 (Fig. 2) is fixed to a shaft 24 that is journaled in the carriage side plates 21. This hand lever is in the shape of a bell crank lever and its other arm 25 is provided with a stud 26 for engaging the edge of a lever 27 journaled loosely on the shaft 24. The hand lever 23 is urged in a clockwise direction by a spring 28, its movement being limited by a stud 29 on the plate 21. The forward end of the lever 27 is provided with a cam slot 30 in which is positioned a stud 31 on an arm 32 fixed to the shaft 20 carrying the platen side plates 19. When the hand lever 23 is pulled forward, or counterclockwise as viewed in Fig. 2, the stud 26 engages the edge of lever 27 and rocks it counterclockwise. This lever, acting on the stud 31, rocks the arm 32 clockwise which moves the side plates 19 from the position of Fig. 3 to that of Fig. 4 to move the platen out of printing position. The lever 27 is connected by a bail 33 (Fig. 1) to a second lever 34 which is like the lever 27 and which has a similar cam slot cooperating with a stud on another arm like the arm 32 on the shaft 20, this construction being for the purpose of having the rocking force applied to both ends of the platen.

When the platen is rocked out of printing position it is latched in this position by a latch 35 (Fig. 2) pivoted at 36 and urged in a counterclockwise direction by a spring 37. This latch has a shoulder 38 adapted to engage over a stud 39 on the lever 27, the latched position of the parts being illustrated in Fig. 1. When an operator desires to release the platen he presses on a thumb piece 40 on the end of one arm 41 of a bell crank lever pivoted at 42, the other arm of said lever having a cam face 43 adapted to engage a stud 44 on the upper end of the latch 35. The pressure on the thumb piece 40 rocks the bell crank lever 41 in a counterclockwise direction which causes the latch 35 to be cammed clockwise thereby releasing the lever 27 whereupon the spring 98 (Fig. 1) moves the platen back to printing position.

Referring to Fig. 3 the journal or record sheet 50 together with a carbon 51 is passed around the platen from the rear over a guide 52, these papers passing across the printing line 22 and coming out at the rear and being held in position by any suitable means such as a flexible strip 53 fastening at one end on the shaft 54 and at its other end on the shaft 55. The papers remain in their position about the platen and move with it as it moves to and from printing position, the condition of the papers in both cases being illustrated in Figs. 3 and 4. Ledger sheets 56 are passed under the platen from the front over a guide table 57 pivoted at 58. These ledger sheets pass between feed rollers 59 and the platen 16 and their rear ends are supported by a guide plate 60. When the platen is in printing position the feed rollers 59 engage all the sheets and press them against the platen so that as the platen is rotated by the line spacing mechanism illustrated in Fig. 1 and designated generally by the reference numeral 61, the papers will move with it.

Pivoted on one of the platen side plates 19 at 70 is a trigger 71 in the form of a bell crank lever, one arm of which has a pointed nose 72 that normally rests on the journal sheet 50. The other arm of this trigger has a rounded end 73 fitting in a slot in the end of one arm of a bell crank latch 74 pivoted on the shaft 55. The other arm of this bell crank latch has a hook nose 75 adapted to engage over a stud 76 fixed to the side plate 21 of the carriage. This latch cannot engage the stud 56 when the platen is in its printing position illustrated in Fig. 3 and it normally is prevented from engaging said stud when the platen is out of printing position as illustrated in Fig. 4. In the latter case, the latch is prevented from engaging the stud by reason of the fact that the trigger 71 is held against movement by the journal sheet with which the nose 72 of the trigger contacts. However, when the end of the journal sheet passes the nose 72, the trigger is freed and the parts moved by gravity to the position illustrated in Fig. 5, the nose 72 of the trigger passing into an opening 77 in the plate 52. This permits the hook 75 of the latch 74 to move over the stud 76 and since this latch is on the shaft 55 which is carried by the platen side plates 19 that in turn carry the platen, the platen is locked against being moved back to printing position.

It should be observed that the trigger 71 is positioned so that it will be released before the end of the journal sheet has actually

reached the printing line 22. This permits several entries to be made after the trigger has been released, but as soon as the platen is moved rearwardly the cam faced end of the nose 75 passes over the stud 76 and the platen is locked against return. It will be understood that line spacing of the platen takes place while the platen is in printing position, hence the end of the journal sheet may be reached while the platen is in printing position where the latch 74 is ineffective. It is very rare for there being more than two or three lines of entries on each journal sheet and hence even though the trigger 71 is released when the first line of entries is made and the platen is not moved back out of printing position immediately, nevertheless several entries may still be made on the record sheet and the latch becomes effective when the platen is moved rearwardly to remove the ledger sheet.

After the platen has been locked out of printing position in the manner above described, it cannot be returned in the ordinary way by pressing on the thumb latch 40. When the operator presses on this latch to release the carriage he finds it locked which immediately notifies him that the end of the journal sheet has passed the trigger 71 and it is time to insert a new journal sheet. After he has inserted a new journal sheet it is still necessary to release the platen and in order that this may be accomplished, a finger piece 78 is provided which is slidably mounted on the side plates 21. This finger piece carries a cam 79 adapted to engage the nose 75 of the latch 74 and cam it upwardly to release the platen.

This finger piece 78 can also be used to disable the latch 74 to enable the machine to be used within the safety feature heretofore described. In such event, the finger piece is moved forward and allowed to remain forward, a spring detent 78′ being provided to hold the piece 78 in the position to which it is moved.

In addition to the signal given the operator that the end of the journal sheet has been reached, the operator is prevented from giving the machine a stroke of operation. When the platen is out of printing position, the paper table 57 occupies the full line position illustrated in Fig. 5. The lower edge of one of the side pieces of this paper table has a cam face 80 resting against a bushing 81 on the platen shaft 18. When the platen moves to printing position this bushing engages the cam edge 80 and moves the paper table 57 to the dot and dash line position of Fig. 5. When the platen is moved out of printing position the paper table 57 moves to the full line position of Fig. 5, and engages the end of a lever 82 pivoted at 83 on the frame 84 of the machine. This lever carries a roller 85 engaging the edge of a latch 86 pivoted at 87 to the frame 84. The latch 86 and the lever 82 are connected by a spring 88 which urges the lever 82 counterclockwise and the latch 86 clockwise. The latch 86 has an edge 89 adapted to pass under a stud 90 on an arm 91 pivoted at 92 on the stem 93 of the key 12. The arm 91 has a bifurcated end engaging a stud 94 on a lever 95 which is moved downwardly by the extension 96 of the motor starting bar 11.

When the parts are in the position illustrated in Fig. 5 the edge 89 of latch 86 is under the stud 90 and this prevents depression both of the motor bar 11 and the key 12. Consequently, when the platen is locked out of printing position depression of both the motor bar 11 and the key 12 is prevented and the operator cannot move either of these members to cause the motor to give the machine a stroke of operation.

The latch 86 has an extension 97 which may be connected to the total key of the machine to prevent depression of said key when the platen is locked out of printing position, such connections not having been shown in the present case.

It will thus be clear that a construction has been provided which will automatically notify the operator when the end of the journal sheet is approaching, will automatically lock the platen out of printing position when the platen is moved to said position with the end of the journal sheet near the printing line, and which will automatically prevent starting of the machine when the end of the journal sheet has approached the printing line. The mechanism has enough flexibility to permit a few entries to be made after the latching mechanism has been tripped so as not to interfere with the normal operation of the machine, but it operates effectively to prevent the operator from going ahead as soon as he tilts the platen out of printing position.

It is to be understood that the structure shown is for purposes of illustration only and that variations may be made in it without departing from the spirit and scope of the invention as defined by the appended claims.

I claim:

1. In a machine of the class described, a printing mechanism, a paper carriage having a platen for moving papers to a printing line to receive printing impressions from said printing mechanism, means for moving the platen to and from printing position, and a locking mechanism for locking said platen out of printing position, said locking mechanism being normally disabled by engagement with a sheet of paper that is about the platen but being released when the end of said paper passes said locking mechanism.

2. In a machine of the class described, a printing mechanism, a paper carriage having a platen for moving papers to a printing line to receive impressions from said printing mechanism, means for moving said platen out of printing position relative to said printing mechanism, and a latching mechanism having a member engaging a sheet of paper as said sheet approaches the platen, said latching mechanism being normally disabled by engagement of said member with said paper but released when said paper passes said member whereby said latching mechanism is rendered effective to lock the platen out of printing position when it is moved to said position.

3. In a machine of the class described having a printing mechanism and a paper carriage for receiving papers movable to a printing line to receive printing impressions, a platen on said carriage movable to and from printing position, means for locking said platen out of printing position when it is moved to said position, said means being normally disabled by engagement with the paper in said paper carriage but being enabled when the end of the paper approaches the printing line, a paper table movably mounted on said carriage, manipulative means for setting said machine into operation, and connections operated by said paper table for locking said manipulative means against operation when the platen is locked out of printing position.

In testimony whereof, I have subscribed my name.

ROBERT L. MULLER.