July 7, 1942. F. J. FURMAN 2,288,800

RECORD FEEDING MECHANISM FOR PRINTING-TRANSFERRING MACHINES

Filed July 1, 1941 3 Sheets-Sheet 1

FIG.1.

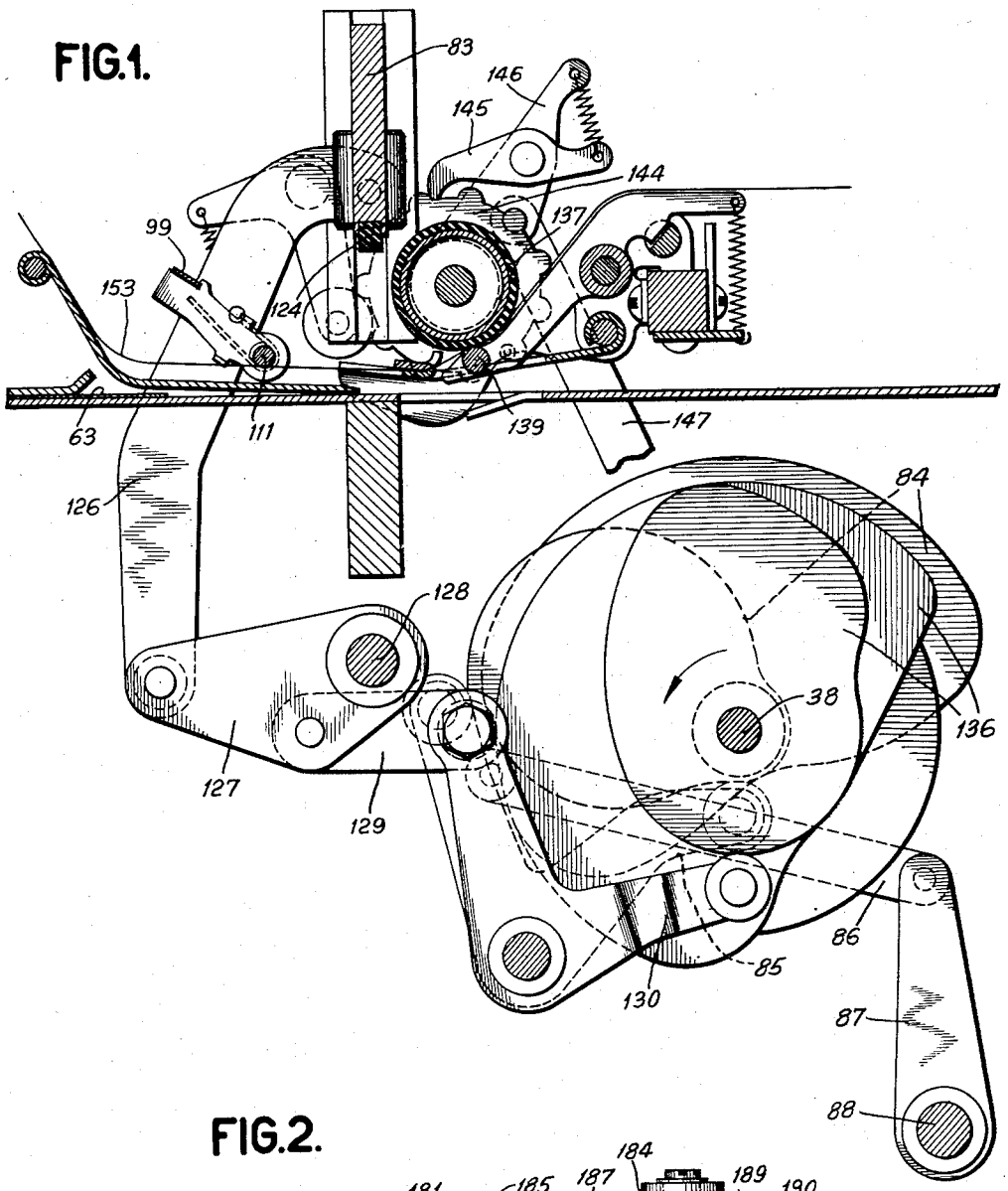
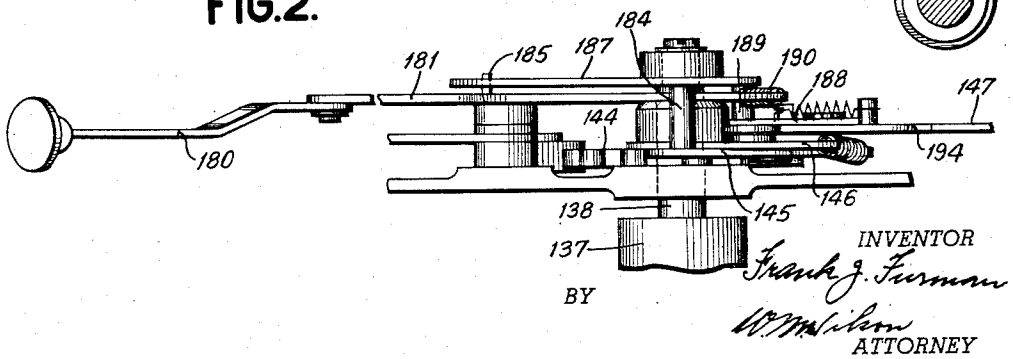


FIG.2.



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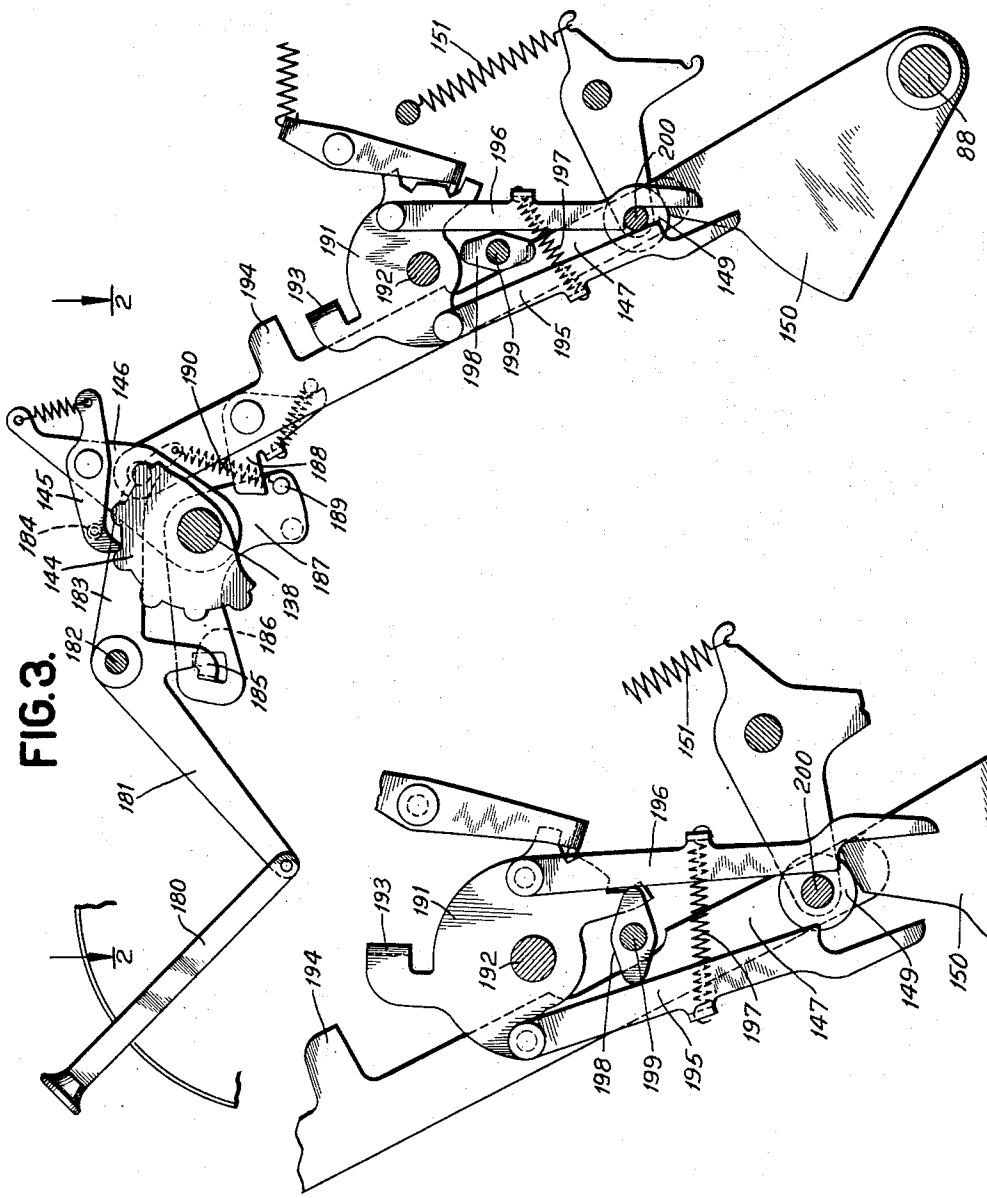


FIG. 3.

FIG. 4.

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FIG.5.

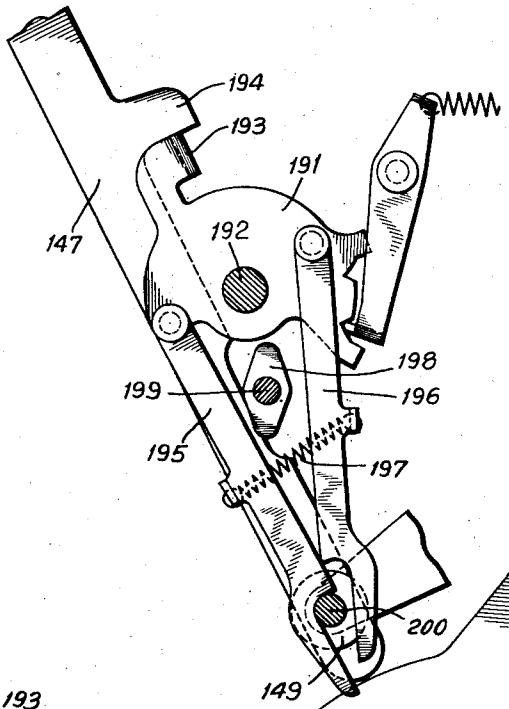
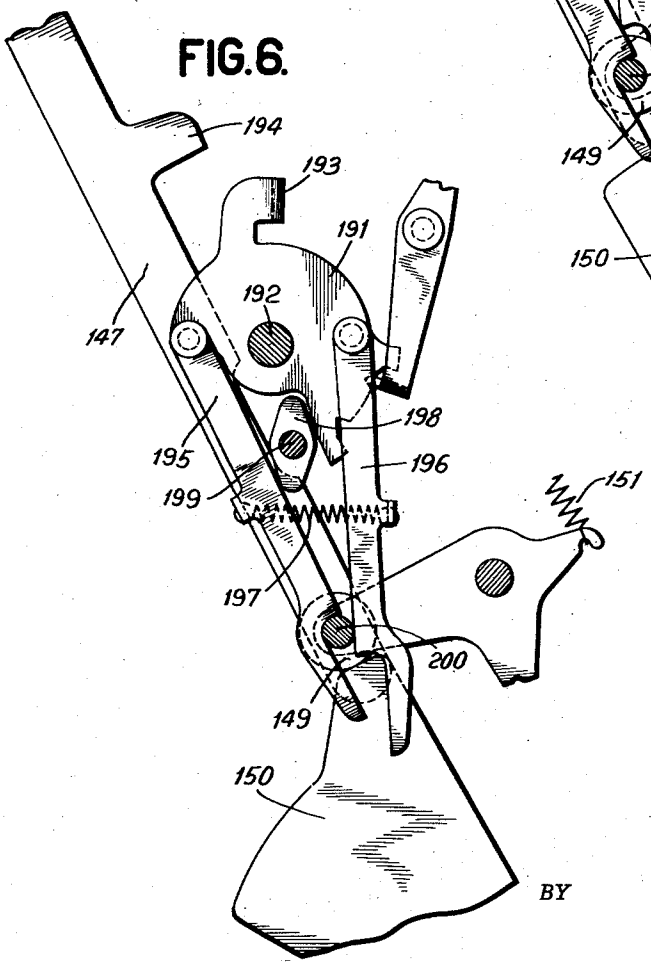


FIG.6.



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RECORD FEEDING MECHANISM FOR PRINTING TRANSFERRING MACHINES

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Application July 1, 1941, Serial No. 400,596

4 Claims. (Cl 271—134.5)

This invention relates to a transfer machine wherein lines of data are posted on ledger sheets from an original or master record. The invention relates particularly to the feeding mechanism for advancing the original record line by line. The machine to which the invention is applied is that shown in Patent 2,189,043, granted to A. W. Mills on February 4, 1940. In the machine of the patent, the original record is advanced line by line for each operation of the machine. Between each advance a ledger sheet is inserted to receive an impression from a line on the master sheet. In certain cases it is desirable to have a line of the master record transferred to a line on each of two different ledgers. For this purpose it is necessary to suspend the feeding of the master sheet, so that the line from which printing is to take place repeatedly will remain in printing position.

A specific object of the invention is to provide mechanism for controlling the feeding of the master record, so that each line thereof will remain in printing position during two impression cycles of the machine or may be set to remain in position for only one impression cycle.

A further object is to provide selective means for selectively holding any selected line on the master sheet in printing position for multiple impressions.

Other objects of the invention will be pointed out in the following description and claims and illustrated in the accompanying drawings, which disclose, by way of example, the principle of the invention and the best mode, which has been contemplated, of applying that principle.

In the drawings:

Fig. 1 is a view in section showing the essential elements of a transfer printing machine such as disclosed in Patent 2,189,043.

Fig. 2 is a view of the control devices for the feed mechanism, the view looking in the direction of lines 2—2 of Fig. 3.

Fig. 3 is a detail showing the mechanism for controlling the operation of the master sheet feed mechanism.

Fig. 4 is a detail of parts shown in Fig. 3 in another position.

Figs. 5 and 6 are further position views of parts shown in Fig. 3.

Referring to Fig. 1, the original or master sheet designated 153 is guided between feed roll 137 and pressure roll 139 which advance the sheet toward the right. This sheet 153 is the original paper from which copy is to be taken and may be a single sheet, fanfold or continuous roll. The transfer is accomplished by interposing a ribbon 99 or similar medium moistened with solvent above the area to be transferred and then applying pressure on the ribbon to bring the ribbon, the original and the ledger or receiving paper together. The solvent dissolves a portion of the carbon from the original and deposits it on the ledger sheet. In Fig. 1 the ledger sheet is indicated at 63 in a position from which it is advanced toward the right to present the line that is to receive the impression beneath the platen 124 of the pressure bar 83.

The main operating shaft 38 carries a pair of cams 136 which cooperate with a bell crank follower 130 which in turn through link 129 rocks a lever 127 to draw link 126 downwardly to effect the transfer.

Also operating from shaft 38 is a pair of cams 84 which through a bell crank follower 85 and link 86 oscillate an arm 87 secured to a shaft 88. This shaft carries a cam member 150 (Fig. 3) which cooperates with a roller 149 on the end of a link 147, whose upper extremity connects with the lever 146 to which is pivoted a spring pressed pawl 145 whose nose rides on ratchet wheel 144. The ratchet wheel 144 is secured to shaft 138 upon which the feed roll 137 of Fig. 1 is mounted. In the operation of the machine, link 147 moves downwardly for each printing impression, and through the pawl 145 and ratchet wheel 144 the feed roll 137 is stepped ahead to bring a new line to the printing position for each operation of the machine.

The foregoing describes briefly the usual operation of the machine as set forth in Patent 2,189,043 to which reference may be made for more detailed explanation. The manner in which the mechanism of the prior machine is modified for the purposes of the present invention will now be explained.

Referring to Fig. 3, there is provided a key 180 which may be depressed whenever it is desired to have the sheet 153 remain in position for two operations, so that two impressions may be taken from the line that is in printing position. When the key 180 is depressed, it rocks a lever 181 about a stud 182 so that the right hand curved arm 183 of the lever which lies beneath a pin 184 in the pawl 145 will raise the latter out of engagement with the ratchet wheel 144. At the same time an arm 185 of the lever will be engaged by a latching ledge 186 formed in an opening of a lever 187 freely pivoted on shaft 138. As a result, when link 147 is drawn downwardly by spring 151, the pin 184 will ride on the upper

curved surface of arm 183 and the ratchet wheel will not be advanced when link 147 is returned upwardly.

On the link 147 there is pivoted a spring pressed by-pass pawl 188 which, when the link moves downwardly, will snap past a pin 189 in lever 187. On the return stroke of the link 147, the pawl 188 will engage pin 189 and rock the lever 187 clockwise to release lever 181, so that the key 180 will be restored under the influence of spring 190. On the next following upward stroke of link 147, the pawl 145 will be effective in the usual manner to advance the record sheet one step. Thus, through the operation of key 180 any selected line of the master sheet may be held in position to create more than one impression.

Where it is desired to have all the lines on the master held in position for two impression cycles, the mechanism about to be described will be brought into action. This comprises a plate 191 pivoted on stud 192 and having a lateral extension 193 for cooperation with an extension 194 on the link 147. In the normal operation of the machine the plate 191 occupies the position shown in Fig. 4 where the extension 193 is out of the path of the extension 194. From plate 191 there depend two interposers 195 and 196 which are urged toward one another by a spring 197. For normal single impression operations, the interposers are held apart by a cam 198 which is secured upon a rod 199 which may be manually rocked from the position of Fig. 4 to that of Fig. 3. The plate 191 is also manually positionable into either of two positions shown in Figs. 3 and 4.

When it is desired to have each line of the master sheet remain in position for two impression cycles, the plate 191 is rocked to the position of Fig. 3 and the cam 198 is also rotated to the position it occupies in Fig. 3. When this manual adjustment has been made, the two links 195 and 196 are drawn together by spring 197 and the lower hook-shaped end of link 196 moves over the top of the pivot pin 200 of the roller 149, while the right hand edge of link 195 rests against the side of pin 200. When link 147 moves downwardly during the first printing cycle, it is prevented from following the cam 150 beyond the position where its extension 194 strikes the extension 193. This amount of travel is not sufficient for the pawl 145 to engage the next tooth in the ratchet wheel 144, so that on the return movement of the link the record is not advanced but remains in position for a second impression.

The initial down stroke of link 147 is of sufficient extent, however, to move pin 200 to the position shown in Fig. 5. In this position the pin 200 has moved below the hook on interposer 195, so that on the return stroke of link 147 interposer 195 will be engaged and moved upwardly to rock plate 191 to the position of Fig. 6, so that on the next down stroke of link 147 the extension 193 will be out of the way and pawl 145 will advance the ratchet wheel one tooth. At this time, on the down stroke of link 147 the hooked end of interposer 196 will snap over the top of pin 200 so that, when link 147 returns upwardly, interposer 196 is actuated to rock plate 191 back to its position in Fig. 3. It will thus be seen that the pin 200 engages and moves the interposers 195 and 196 during alternate operations, so that the plate 191 takes the positions of Figs. 3 and 6 during alternate printing impressions, that is, during the first printing impression from each line of the master sheet the plate is in the position of Fig. 3 to prevent feeding during the first impression cycle. During the repeat impression cycle, the plate is in its rocked position of Fig. 6 so that feeding can be effected and the plate incidentally rocked back again to its intercepting position.

With the arrangement shown and described, a flexibility of operation of the machine is provided whereby through the use of key 180 any selected line in the master sheet may be held in position for repeat positioning. If three lines were desired for a selected line, the key 180 would be depressed the second time after the first impression has been made. As a result, the selected line on the master sheet would be held in position for three impressions.

Where two impressions are desired from each line of the master sheet, plate 191 and cam 198 are manually rocked to the position of Fig. 3 and each line of the master sheet will be held in posting position for two operations. Finally, where a single operation only is required for each line of the master sheet, the plate 191 and the cam 198 are rocked to the position of Fig. 4.

While there has been shown and described and pointed out the fundamental novel features of the invention as applied to a single modification, it will be understood that various omissions and substitutions and changes in the form and details of the device illustrated and in its operation may be made by those skilled in the art without departing from the spirit of the invention. It is the intention therefore to be limited only as indicated by the scope of the following claims.

What is claimed is:

1. In a machine having a table supporting a master and ledger sheet and a pressure bar movable to press the sheets together to transfer a line of data from the master to the ledger sheet, a feed roll for advancing the master sheet line by line, a line space mechanism for the feed roll normally operative to space the sheet a line for each operation of the pressure bar and operating means therefor, in combination with an interposer positionable in or out of an intercepting position with respect to the line space mechanism, and means controlled by the operating means for the line space mechanism for automatically positioning said interposer alternately in its in and out positions during successive operations of said operating means.

2. In a machine having a table supporting a master and ledger sheet and a pressure bar movable to press the sheets together to transfer a line of data from the master to the ledger sheet, a feed roll for advancing the master sheet line by line, a line space mechanism for the feed roll normally operative to space the sheet a line for each operation of the pressure bar and operating means therefor, in combination with a pivoted interposer having two positions, one in which it causes suppression of line spacing and another in which it permits line spacing, a pair of links, one on each side of the pivot of said interposer, and means controlled by the operating means of said line space mechanism for engaging said links in alternation during successive operations, whereby to rock the interposer from one position to another.

3. In a machine of the class described, a sheet feeding roller, a ratchet wheel thereon, a pawl normally engaging the wheel, a link connected to the pawl to oscillate the same for advancing

the wheel, a repeat key, a member operated by the key to disengage the pawl from the wheel, a latching plate to hold the member in operated position whereby operation of the link will fail to advance the wheel, and means on the link effective during its operation to cause the latching plate to release said member, whereby the next following operation of the link will be effective to advance the wheel.

4. In a machine of the class described, a sheet feeding roller, a ratchet wheel thereon, a pawl engaging the wheel, a link connected to the pawl, a spring for drawing the link in one direction to retract the pawl, a cam to return the link and advance the ratchet, an interposer movable by the link into the path of the link during its return movement, said interposer limiting the next following spring actuated movement of the link, and said interposer being moved out of the path of the link upon its return from said limited movement, whereby on the succeeding spring actuated movement the link will move its full stroke.

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