Mar. 3, 1925. 1,528,498

N. MILLER

ADDING AND RECORDING MACHINE

Filed Feb. 12, 1921 2 Sheets-Sheet 1

Fig. 2.

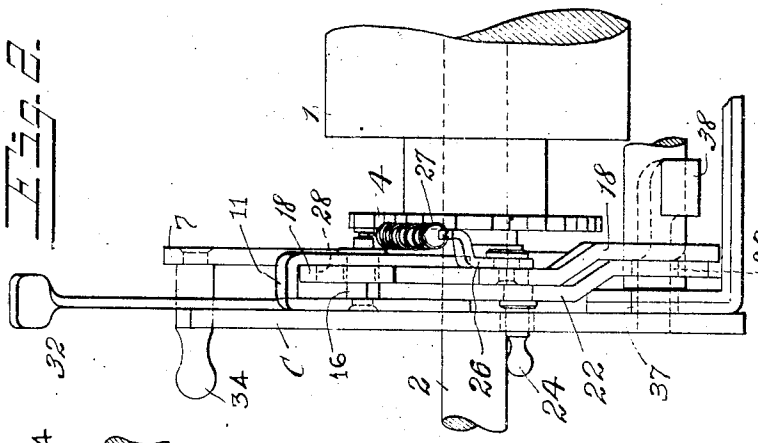


Fig. 4.

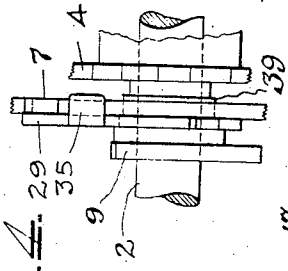


Fig. 1.

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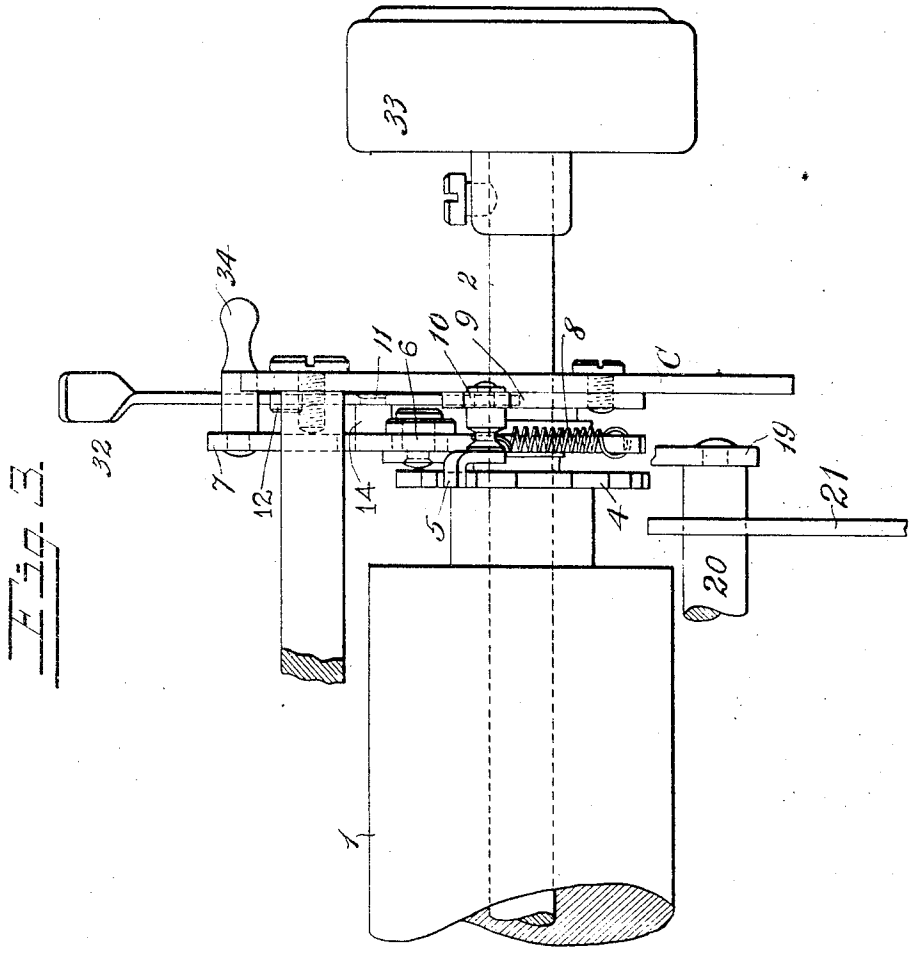


Fig. 3.

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By: N. N. Low

Attorney.

Patented Mar. 3, 1925. 1,528,498

UNITED STATES PATENT OFFICE.

NICHOLAS MILLER, OF GRAND RAPIDS, MICHIGAN, ASSIGNOR, BY MESNE ASSIGNMENTS, TO ADD-INDEX CORPORATION, A CORPORATION OF DELAWARE.

ADDING AND RECORDING MACHINE.

Application filed February 12, 1921. Serial No. 444,463.

To all whom it may concern:

Be it known that I, NICHOLAS MILLER, a citizen of the United States, residing at Grand Rapids, in the county of Kent and State of Michigan, have invented certain new and useful Improvements in Adding and Recording Machines, of which the following is a specification.

Paper feed mechanism for adding machines.—The invention relates to the mechanism for feeding the paper to be printed or tabulated on, in the class of machines in which a wide carriage and paper are employed, for the purpose of printing two or more columns of numbers, or several items in a single line.

In such machines the sheet or strip of paper is ordinarily fed between a platen roll having a step by step rotation and one or more pressure rolls, the platen roll being turned one step by the adding mechanism after the printing of each number to bring a new (blank) line into position opposite to the type to receive the impression of the next number.

My improvements supply adjusting means for the platen roll turning mechanism of such machines, by which the automatic operation of such mechanism is suspended at will, for instance during the printing of several numbers or items in a single line, and the roll will not be turned at the end of each printing operation. A reverse operation of said adjusting means will cause the roll to be automatically turned in the usual manner at the end of a printing operation. I further combine in my adjusting means devices whereby the roll will be automatically turned a short distance, or a greater distance, for the purpose of correspondingly spacing the lines of printing, as may be desired.

With such objects in view, as well as other advantages which may be incident to the use of the improvements, the invention consists in the parts and combinations thereof hereinafter set forth and claimed, with the understanding that the several necessary elements constituting the same may be varied in proportions and arrangement without departing from the nature and scope of the invention.

In order to make the invention more clearly understood there are shown in the accompanying drawings means for carrying the same into practical effect, without limiting the improvements, in their useful applications, to the particular construction which, for the purpose of explanation, have been made the subject of illustration. In the said drawings:

Figure 1, is an end elevation, looking at the right-hand side of the machine, of a paper feed mechanism embodying my improvements.

Fig. 2 is a rear elevation of the same.

Fig. 3 is a front elevation.

Fig. 4 is a partial rear elevation from the line X—X of Fig. 1, showing certain parts which are not plainly shown in Figure 2 and omitting the spring 30.

In the drawing a showing of the listing adding machine and its mechanism is not necessary to a clear understanding of my invention, and the same may be of any suitable character, and I have confined the illustration to the paper feeding mechanism.

Referring to the drawing, 1 is the paper feeding roll and platen having a shaft or journals 2 mounted in a suitable paper carriage C adapted to traverse horizontally and transversely of the machine behind the printing type, the latter having a rearward printing movement against the paper 3. 4 is a ratchet attached to the feed roll 1, which ratchet is actuated in the direction shown by the arrow, and with a step by step movement by a pawl 5. Said pawl is pivoted at 6 on a rearwardly and forwardly rocking lever 7, this lever being pivotally mounted on the journal 2. The pawl is pressed towards the ratchet by a spring 8, and at the end of the rearward actuating movement of the lever 7 the pawl is lifted away from the ratchet by a cam 9 fixed on the frame of the carriage, and on which rides a pin 10 of the pawl. This disengagement takes place just at the end of the feeding of the paper up for a distance equal to the space between lines of printing. On the forward movement of the lever 7 the pin 10 rides downward and inward on the fixed cam, and the pawl takes one or more teeth of the ratchet for the actuation of the latter.

The lever is rocked by a link 11, whose forward and backward movement is limited by front and rear stops 12, 13, fixed on the carriage frame. This link has a pin 14 which engages in a slot 15 of the lever and is reciprocated by a pin 16 which normally

engages in a slot or fork 17 of the vertical arm 18 of an angle lever, the forward arm of which is shown at 19. The arm 19 has a transverse bail rod 20, which is engaged by an operating element 21 of the adding machine. The element 21 being pulled down by the forward movement of the usual crank handle of the adding machine causes the angle lever to be rocked downward and forward, whereupon the arm 18 forces the link 11 and lever 7 forward, and the pawl 5 rides downward and inward on the fixed cam and engages the ratchet ready for a paper feeding actuation. The printing having taken place, the crank handle is returned backward, the angle lever and lever 7 rocked backward, and the pawl 5 turns the paper feeding roll from the printed line to the next line. 22 is a cam pivoted at 23 on the angle lever, and movable forward and backward at will by means of a manipulative pin 24 fixed on the cam and extending to the right hand side of the machine. One end of this pin works in a slot 25 of the arm 18, whereby the movement of the cam is limited. The cam is held, but so as to yield to manipulation, in either position, by a spring dog 26 which can bear on the front side of the pin 24 to hold the cam 22 in its rearward position, and can bear on the rear side of the pin to hold the cam in its forward position. The dog 26 is pressed towards the pin by a spring 27, which connects the tail of the dog with the pin 16, but so as to be yieldable when the pin 24 is manipulated, this being accomplished by making the dog with inclined faces to bear on the pin as described above. The further action of this spring is to press the pin 16 downward and the link 11 and lever 7 rearward. When the cam 22 is in its rear position, the pin 16 may rest in the fork 17, and the paper will be automatically fed as above set forth, but when the cam is adjusted forward, the pin 16 will ride upon the cam and be removed from connection with the angle lever. This upward movement of the pin will slightly lift the rear end of the link 11, and the pin will remain within a slot 28 of the arm, so that the arm and slot will play idly along the pin, the slot 17 being temporarily obliterated for operative purposes by the cam 22.

In this last described position of the parts printing may be performed at the several desired columns or places of the same line of the paper. This is done by the aid of a transverse tabulating movement of the carriage, in a known manner which does not require to be further described, but without any line to line feed of the paper.

In order to provide for different degrees of rotation of the feed roll, the link 11 is adjustable up and down at its forward end, the pin 14 being correspondingly adjustable in the slot 15. When the pin is in the upper part of the slot, a shorter automatic feed of the paper will take place, causing the lines to be printed closer together, and when the pin is in the lower part of the slot and nearer to the center of rotation of the ratchet, a longer feed will be caused and lines will be printed further apart. The pin may be maintained in various parts of the slot, as may be desired. I have shown means for holding it in two positions, comprising a dog 29 loosely pivoted on the journal 2, the upper or lower inclined face of which dog is pressed against the pin by a spring 30 which connects the tail of the dog with a hook 31 on the lever 7. The dog will thus brace the pin up from below or will hook over above it, but will yield when the link 11 is adjusted vertically by a manipulative button or forwardly extended arm 32.

When the automatic feed is held disconnected by the cam 22 the feed roll may be turned backward or forward by hand by the usual finger buttons or heads 33 which are fixed on the outer ends of the journals 2, and the roll may be maintained in the position to which it is adjusted by the usual star wheel fixed on the left hand journal and a spring actuated roller engaging between the points of the star wheel.

When successive lines are to be printed with two or more items in each line, it may be convenient just before the adding machine handle is actuated for the printing of the last item of a line, to throw the cam 22 rearward, whereupon the printing of the last item will be followed by an automatic feed of the paper. Then the cam will be thrown back forward by hand, and the carriage will be returned to the right, and a new line will be printed without any further upward feed of the paper, or the paper may be fed from line to line by hand without any use of the automatic feed, and the manual feed will be by means of the handle 34 furnished by the upper end of the lever 7, which will be reciprocated forward and backward to accomplish the paper feed from the printed line to the new line. On the same movement of the hand, the carriage may be returned to the right.

35 is a lip on the dog 29 which is adapted to engage with a part of or projection on the lever 7, whereby the dog is kept from constantly pressing on the pin 14, which would cause friction and wear. When the lever 7 is moved rearwardly it causes the pin 14 to have a tendency to move downward in the slot 15, especially if the platen offers much resistance to turning. To overcome this a forward projection 36 is provided on the link 11 which is arranged to be normally above the stop 12 (Fig. 1), so that any downward pressure on the link 11 is prevented until the rearward movement has

been started, and after the projection 36 is disengaged from the stop 12 the force component tending to move the pin 14 downward will have disappeared. The link 11 has a yoke formation seen in Fig. 2, whereby it embraces the members 18 and 22 and maintaining the link in alinement with the different connected parts, so as to insure its satisfactory manual operation by the handle 32. The members 18 and 22 are suitably offset, as seen in Fig. 2, and the cam 22 is provided with a hub 37 for rendering its operation more reliable. The lever 19 is fastened on the shaft 23 by a bent portion 38, which is spot-welded thereto.

It will be understood that my invention contemplates the forming of the slot 28 in the link 11 and fixing the pin 16 on the arm 18, such construction having substantially the same mode of operation as that which I have illustrated.

It will be understood that the carriage is provided with an arm 19 at each end, the two arms sustaining the bail 20. 39 is a hub on the lever 7 to support and space the same on the platen shaft 2.

What I claim is—

1. A paper feed mechanism for adding machines and the like, having, in combination: a paper-feeding roll, a ratchet attached to said roll, a pawl for turning the ratchet, devices operated by a movable part of the adding machine for reciprocating the pawl, said devices being adjustable to vary the throw of the pawl, and manipulative means which is separate from and inoperative of other parts of the adding machine for disconnecting said devices at will so that operations of the adding machine may be performed with two or more printings on the same line without any feed of the paper by said roll, said disconnection leaving the roll free for turning by hand.

2. The combination of a paper feed roll, a ratchet attached thereto, a tabulating carriage carrying said roll, a lever mounted on the carriage and turnable relative to and with the ratchet, a pawl on said lever adapted to turn the ratchet, a fixed cam controlling said pawl, a lever arm which is swingable towards and from the lever on the carriage, a link connected with said lever and extending to said arm, manually operative means for connecting and disconnecting said link and arm, and means whereby said arm may be operated by the mechanism of the adding and recording machine.

3. In a paper feed mechanism for adding machines and the like, the combination of paper holding and feeding devices, means for adjusting said devices for variable distances of feed, means for actuating the paper feed devices from the adding mechanism, and devices for disconnecting said actuating means, whereby the paper feeding devices are left free to be manipulated, said actuating means comprising a notched arm operated by the adding machine mechanism and a pin connected with the paper feed devices and said disconnecting devices comprising means for covering the notch of said arm whereupon the pin may ride thereover.

4. In a paper-feed mechanism for adding machines and the like, the combination of paper-holding and feeding devices, an actuating element of the adding machine, and an arm the forward end of which is adjustable relative to the paper-feeding devices to vary the length of feed, and the other end of which arm is connectable with said actuating element for the operation of the paper-feed and disconnectable from said actuating element for the cessation of the paper feed.

5. In a paper-feed mechanism for adding machines and the like, the combination of rotatable paper-holding and feeding devices, an actuating element of the adding machine, an arm connected with said paper-feeding devices and having its point of connection adjustable towards or from the center of rotation of the paper-holding means, and means whereby said arm is connectable and disconnectable with said actuating element.

In testimony whereof I affix my signature.

NICHOLAS MILLER.