The present invention relates to paper feeding equipment for accounting machines and is particularly directed to a device for imparting rapid and variable rotational movement to a platen roll to space the record material supported thereby.

In the present-day business world, modern accounting machines are required to perform all types of accounting and related tasks, a typical example of which is the periodic preparation of bills or statement slips for each of the many customers who use services rendered by public utility companies, such services including, for example, telephone, electric, water, etc. The preparation of such a large number of similar statement slips becomes a laborious and time-consuming task, and it is the general object of this invention to facilitate the preparation of these many statements by providing manually-operable means for rapidly rotating the platen roll of an accounting or like machine to a plurality of predetermined positions to locate different portions or printing fields of said statements supported thereby in printing position for the entering of various data therein.

Another object of the present invention is the provision of means to rapidly rotate a platen roll different extents to space the record material supported thereby accordingly.

A further object is the provision of manually-operable means for rapidly rotating a platen roll different extents to locate corresponding portions of the record material supported thereby in printing position.

A still further object is to furnish means to rapidly rotate a platen roll to a plurality of predetermined or fixed printing positions to align different corresponding portions of the record material supported thereby in printing position.

With these 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 accompanies and forms a part of this specification, in the different views of which drawing similar reference numerals refer to similar parts.

In the drawings:

Fig. 1 is a side elevation, as observed from the left, showing the mechanism for rapidly rotating the platen roll.

Fig. 2 is a top plan view of the mechanism shown in Fig. 1, part of said mechanism being broken away to better show parts which would otherwise be hidden from view.

Fig. 3 is a detail view of the notched disk and feed ratchet associated therewith, for rotating the platen after a long feed.

Fig. 4 is a facsimile of a fragmentary portion of a statement slip which may be advanced or fed to several printing positions by the mechanism disclosed herein.

Description

The present invention is directed to mechanism for rapidly rotating a platen roll 20 (Figs. 1 and 2) for feeding record material 21 in relation to printing sectors 22, for locating different portions of said record material in printing position, so that various data may be printed in proper locations thereon. The left-hand end of the platen 20 has integral therewith a sleeve 23 rotatably supported in a left-hand end frame 24, which, together with a similar right-hand end frame and various cross plates, bars, and rails (not shown), forms a traveling carriage, which is mounted on the machine for transverse movement for presenting various columnar portions of the record material to the prndata mechanism.

The traveling carriage disclosed in this application is similar in every respect to, and operates exactly like, the traveling carriage used on a well-known type of accounting machine, which is fully disclosed in United States Patent No. 2,625,749, issued January 27, 1953, to Raymond A. Christian et al., to which reference is hereby made for a full description of mechanism not pertinent to the present invention and for that reason not fully disclosed herein.

In the present embodiment, the record material 21 is in the form of a series of identical bills or statements, such as that shown in Fig. 4, connected in a continuous strip or web, a supply of which may be in the form of a roll or a fanfold package supported in the carriage framework in any suitable manner. The web of record material 21 is directed beneath the platen roll 20, as shown in Fig. 1, and is maintained in yielding contact with the periphery of said platen roll by the usual pressure rollers (not shown), and, in addition, an auxiliary pressure roller 25, supported in a yoke 26, in turn mounted in the carriage framework, coats with the upper edges of the bills to maintain them in contact with the platen roll and to form a bearing bar for separating the completed bills from the web of record material, said bills being perforated in proper locations to facilitate their separation from the continuous web.

As indicated in Fig. 1, counter-clockwise rotation of the platen roll feeds the record material 21 in relation to the printing sectors 22 to properly position different portions of said record material in relation to said printing sectors, whereupon operation of said sectors, in cooperation with an inking ribbon 27, prints records upon said record material. The platen roll 20 may be revolved manually by means of a knob 28 (Figs. 1 and 2) connected to the sleeve 23, or said platen roll may be revolved automatically by means of a ratchet 29, which is connected to the sleeve 23, the teeth of said ratchet being engaged by a feed pawl (not shown) which may be operated upon each cycle of operation of the mechanism to rotate the platen roll the equivalent of one or more line spaces in a counter-clockwise direction, as shown in Fig. 1, to advance the record material 21 in relation to the printing sectors 22. A retaining roller (not shown) coats with the teeth of the ratchet 29 to yieldingly retain the platen roll 20 in any of its fed positions.

The feed pawl retaining roller and the remainder of the line-spacing mechanism are fully disclosed in the Patent No. 2,625,749. Line-finding knob 30 (Figs. 1 and 2) is provided for disconnecting the platen 20 from the ratchet 29 and for turning said platen in relation to said ratchet to properly locate a particular position or line of the record material in printing position. If desired, the platen 20 may be constructed with two identical sections of the same length or of different lengths, which may be rotated independently of each other for the proper line-spacing of separate record materials supported thereby, or the two sections may be coupled together for unitary or concert movement, if desired, and this coupling and uncoupling are controlled by a knob 31 (Fig. 2), which, when in its outer position, as shown here, disconnects the two portions of the platen roll 20 but, when pushed inwardly to
its inward position, couples the two sections of the platen together for unitary rotation, either by the knob 28 or automatically.

Integral with the ratchet 29 (Figs. 1 and 2) is a gear 32, which meshes with an idler gear 33 pivoted on a stud 34 journaled in a bushing secured in the sidewall of the frame 35, and the left-hand end of which is journaled in a hub 36 secured to a shaft 37, the right-hand end of which is journaled in a bushing in the frame 24, and the left-hand end of which is journaled in a hub 37 secured in a support plate 38 properly spaced from and secured to the side wall of the frame 24 by means of three screws, the left-hand ends of which are secured in the plane 38 and the right-hand ends of which are secured to the frame 24 by screws. A disk 41 (Figs. 2 and 3) has integral therewith a hub (not shown) which is secured to the shaft 36, and said disk has operating shoulders 42 and 43, engageable by a feed pawl 44 pivotally mounted on the outer end of an arm 45 free on the hub of the disk 41, said pawl 44 being yieldingly urged into engagement with the shoulders 42 and 43 by a spring 46, tensioned between said pawl and said arm 45. Integral with the arm 45 is a pinion 47, the teeth of which mesh with a gear segment 48 (Figs. 1 and 2) pivotally mounted on a stud 49 secured in the plate 38, said segment being operatively connected by a stud 50 to a downward extension of an operating lever 51, also free on the stud 49. A spring 52, tensioned between the stud 50 and a stationary stud secured in the plate 38, urges the lever 51 and the segment 48 counterclockwise to normally maintain a raised stop surface of said segment 48 in yieldling contact with a shoulder on a stop stud 53 secured in the plate 38. The operating lever 51 has secured to its outer end, in convenient location for manipulation, a handle or finger piece 54.

In Fig. 1, the statement slip feeding mechanism is shown in normal position, with the upper edge of a statement slip 21 just protruding above the roller 25 and with the pawl 44 resting on the periphery of the disk 41 just above the feed shoulder 43 on said disk. In this position, the statement slip 21 is in proper location for the printing of the data indicated at 55 (Fig. 4) thereon, which requires at least two or more vertical or line-spacing movements in a counterclockwise direction of the platen roll 20, which may be imparted manually, by means of the knob 28, or automatically, by the usual line-spacing mechanism. Such line-spacing movement of said platen roll 20, through the gears 32, 33, and 35, rotates the disk 41 the equivalent of two line spaces in a counter-clockwise direction to move the shoulder 43 above the upper end of the feed pawl 44, which is immediately spring-urged into the path of said shoulder 43.

In other words, two counterclockwise line-spacing movements of the platen roll 20 are required to move the disk 41 sufficiently to permit the feed pawl 44 to drop in behind the feed shoulder 43, and, as it is always necessary to line-space the platen at least two spaces or more, for the printing of the required data in location 55 thereon, the shoulder 43 is always moved into position to be engaged by the pawl 44 upon operation of the handle 54 and the lever 51.

After the required data has been printed at location 55 upon the bill or statement 21, the operator grasps the handle 54 and moves said handle and the lever 51 counterclockwise or downwardly (Fig. 1) against the action of the spring 52, thus rotating the segment 48. In cooperation with the pinion 47, to rotate the arm 45 counterclockwise, whereupon the pawl 44 engages the shoulder 43 and carries the disk 41, the shaft 36, and the gear 35 in unison therewith, in a counterclockwise direction. This rotation of the platen roll 20 through the lever 51 and the gear 32, rapidly rotates the platen 20 counterclockwise to move the statement slip 21 from its first printing position to its second printing position, which is indicated at 56 on the slip 21 (Fig. 4). As shown in Fig. 1, clockwise rotation of the segment 48 moves a square stop stud 57, secured therein, into the path of a stop shoulder 58 on the disk 41 (see also Fig. 3), to stop said disk and connected parts, including the platen 20, in position to locate the second printing position 56 of said slip 21 opposite the printing line. Releasing the handle 54 and the lever 51, after the first feeding movement has been imparted to the statement slip, permits the spring 52 to return said handle and the segment counterclockwise, which return movement is terminated by the stop surface on said segment contacting the stop stud 53. This return movement of the segment 48 rotates the arm 45 clockwise in a take-up direction until the pawl 44 drops behind the feed shoulder 42, as indicated in dot-and-dash lines in Fig. 3, in preparation for the second feeding movement of the statement slip 21.

After the data indicated at 56 (Fig. 4) has been printed upon the statement slip 21, the operator grasps the handle 54 and imparts the second feeding movement in a clockwise direction to said handle, the lever 51, and the segment 48. This causes the segment 48, in cooperation with the pinion 47, to rotate the arm 45 in a feeding or counterclockwise direction, during which movement the pawl 44 engages the shoulder 43 and carries the disk 41 in unison therewith. Second feeding movement of the segment 48 (Fig. 1), as explained above, moves a square stop stud 59, carried thereby, into the path of a stop surface 60, formed by a projection on an arm 61 secured on the shaft 36, to obstruct further movement of said arm and said shaft after the platen roll 20 has been rotated counterclockwise sufficiently to advance the lower end of the completed statement slip 21 above the feeding roller 25, so that said statement may be separated from the web by using said roller 25 as a tearing bar. This second feeding movement of the platen roll 20 also positions the succeeding statement slip on the web 21 in position for the initial printing near its upper edge, as explained before.

After the second feeding movement has been imparted to the platen 20, the operator releases the handle 54, permitting said handle, the lever 51, and the segment 48 (Figs. 1 and 2) to be restored counterclockwise to normal position by the spring 52, which is determined by the stop surface on said segment contacting the stop stud 53, and upon this return movement the feed pawl 44 is located in relation to the first feeding notch or shoulder 43, as shown in Fig. 1, in proper position for a repetition of the feeding cycle of the platen roll and the statement slip, as explained above.

From the foregoing description it should be clear that the present invention is directed to a manually-operable device of simple and efficient design and structure for rapidly rotating the platen roll of an accounting or like machine to two predetermined positions to quickly feed corresponding portions or fields of a statement slip supported thereby into printing position for the entering in said field of various data.

While the form of mechanism herein shown and described 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:

1. In a machine of the class described, constructed and arranged to print records on a web of separable record material, said machine having means including a rotatable platen roll for advancing the web of record material to various printing positions, the combination of a hand lever; a segment connected to the lever and movement in unison therewith; means operable by the segment to rotate the platen to advance the record material; countaking stop means on the segment and the rotating means to terminate rotation of the platen at the end of one stage of its movement
to locate one portion of the record material in printing position; and coacting stop means on the segment and the rotating means to terminate rotation of the platen at the end of another stage of its movement to locate a different portion of the record material in printing position.

2. In a machine of the class described, constructed and arranged to print records on a statement slip, said machine having means including a rotatable platen roll to advance the statement slip to various printing positions, the combination of a hand lever for rotating the platen roll; a segment connected to the lever for movement in unison therewith; a feed pawl operated by the segment; means including a disk engageable by the feed pawl to rotate the platen to advance the slip; a stop arm integral with the disk; stop means on the segment coacting with the disk to stop the platen at the termination of a first stage of its rotational movement to locate one portion of the statement slip in printing position; and stop means on the segment coacting with the stop arm to stop the platen at the termination of a second stage of its rotational movement to locate a different portion of the statement slip in printing position.

3. In a machine of the class described, constructed and arranged to print records on a statement slip, said machine having means including a rotatable platen roll for advancing the statement slip to various printing positions, the combination of a hand lever for rotating the platen; a segment connected to the lever for movement in unison therewith; a feed pawl operated by the segment; means including a disk engageable by the feed pawl to rotate the platen to advance the slip; a stop arm integral with the disk; coacting stop means on the segment and the disk to stop the platen at the end of one stage of its rotational movement to locate one portion of the slip in printing position; and stop means on the segment coacting with the stop arm to stop the platen at the end of another stage of its rotational movement to locate another portion of the slip in printing position.

4. In a machine of the class described, constructed and arranged to print records on different portions of a statement slip, said machine having a platen roll constructed and arranged to be rotated automatically or manually to feed the statement slip, the combination of a hand lever for rotating the platen roll; a segment connected to the hand lever for operation in unison therewith; a feed pawl constructed and arranged to be operated by the segment; means including a feed disk operatively connected to the platen, said disk having shoulders engageable by the pawl to rotate the platen roll different extents; a stop shoulder on the disk; a first stop stud in the segment, said stud engageable with the shoulder to stop the platen at one stage of its movement to locate one portion of the statement slip in printing position; a stop arm integral with the disk; and a second stop stud in the segment, said stud engageable with the stop arm to stop the platen in another stage of its movement to locate another portion of the slip in printing position, said latter stop means arranged to remain effective until the platen is rotated a predetermined extent by means other than the hand lever.

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