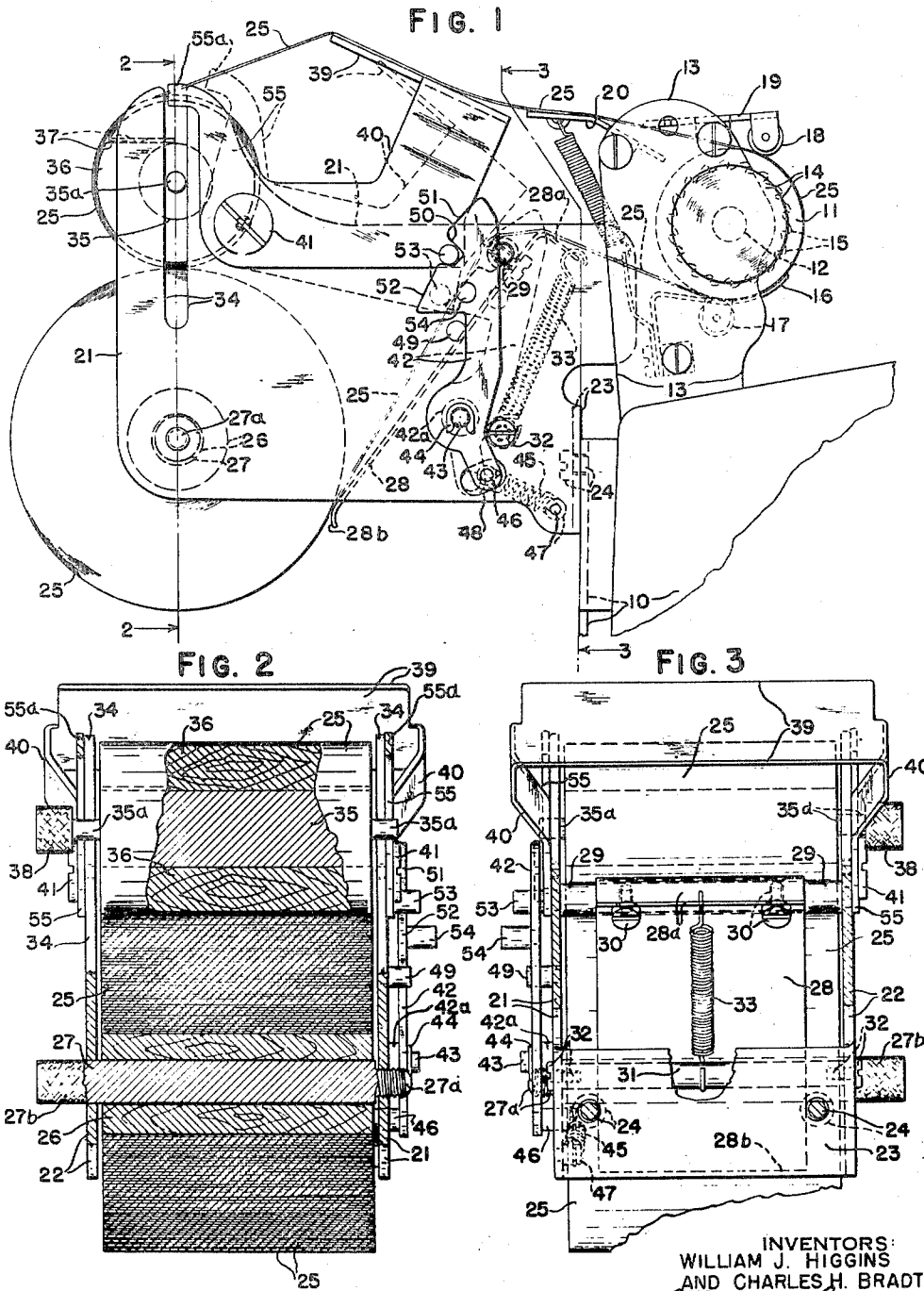


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PAPER WEB SUPPORTING AND FEEDING MEANS  
FOR RECORDING MACHINES  
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## PAPER WEB SUPPORTING AND FEEDING MEANS FOR RECORDING MACHINES

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The general object of the invention is to provide a simple, inexpensive and efficient paper web supporting and feeding means for recording machines, such as recording calculating machines, whereby a record receiving paper web or tape may be unwound from a supply spool, fed across the printing line of the machine and rewound on a rewind spool as an incident to actuation of the machine.

Further objects of the invention are to provide improved means for mounting the web supply and rewinding spools in the machine for quick and easy insertion and removal of said spools and for driving of the rewind spool by the supply spool, for controlling the unwinding and rewinding of the paper web, so mounting the spools that they may be readily removed but are nevertheless securely held against accidental demounting of the spools during handling or transportation of the machine, and for supporting the paper web printed face uppermost at a location between the printing line of the machine and the rewind spool to permit an operator to write upon the paper web.

Other objects and advantages of the invention will appear from the following description in detail of the preferred embodiment of the invention illustrated in the accompanying drawings, in which:

Figure 1 is a fragmentary side elevation of a recording machine equipped with a paper web supporting and feeding means embodying the invention;

Figure 2 is a vertical transverse sectional view taken on the line 2—2 of Figure 1; and

Figure 3 is a vertical transverse sectional view taken on the line 3—3 of Figure 1.

The improvements are shown incorporated in a known recording calculating machine, only so much of which is shown and will be described as is necessary for an understanding of the present invention.

Said machine has a main frame 10, a roller platen 11, having a shaft 12 journaled in a platen supporting frame 13 which is mounted in the rear part of the main frame 10, a finger wheel 14 which is fixed on one end of the platen shaft for use to manually rotate the platen, and a ratchet wheel 15 which is fixed to the platen at one end of the platen and is actuated by suitable means (not shown) to rotate the platen to line space the record receiving paper web automatically after each line of matter is printed upon actuation of the machine to print upon the web.

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The platen 11 extends horizontally across the machine adjacent the rear end of the machine frame 10 to back the paper web to receive inked type impressions along a printing line which extends horizontally along the platen at the front of the platen substantially midway between the highest and lowest parts of the periphery of the platen. The recording means (not shown) of the machine are adapted to automatically print a line of matter on the paper at said printing line upon each printing actuation of the machine.

Said machine also has suitable means cooperative with the platen for feeding the paper web, said means including a paper guiding table 16 which is mounted in the platen supporting frame 13 under the platen, a paper feed roller 17 journaled in said table, a paper feed roll 18 journaled in a suitable support 19 which is mounted on the platen supporting frame above the platen, and a paper guiding table 20 mounted on the platen supporting frame above and to the rear of the platen.

The improvements will now be described.

At the rear of the machine, a sheet steel or other metal bracket, having parallel side plates 21 and 22 and an integral front crossbar 23, is detachably fixed to the rear end of the machine frame 10 by screws 24 which fasten the crossbar 23 to the frame with the crossbar extending horizontally transversely of the machine and with the side plates 21 and 22 extending rearwardly from the platen and machine frame.

The rolled supply of paper 25 to be printed upon by the machine is rolled upon the usual cylindrical wooden supply spool 26, such spool and rolled supply of paper thereon being a trade item supplied as a unit for use in machines of the kind set forth. For journaling the spool with its rolled supply of paper, there is provided in the improved machine a supply spool journaling spindle 27 which is of cylindrical cross section and formed of metal, such as steel. The spindle has a reduced and screw threaded end portion 27<sup>a</sup> threaded through a screw threaded aperture in bracket side plate 21. The main body portion of the spindle has a loose fit in the bore of the supply spool 26 and in a circular hole in bracket side plate 22. Spindle 26 extends horizontally transversely of the machine and has a knurled end portion 27<sup>b</sup> which is located at the outer side of plate 22 at the right hand side of the machine for ready attachment of the spindle to and detachment thereof from the bracket to mount and demount a supply spool. Portion 27<sup>a</sup> of the spindle is threaded with a right hand screw

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thread so that unwinding rotation of spool 26 will not unscrew the spindle. The spindle is disposed parallel to the axis of the platen roll 11 and is located at the lower rear part of the bracket below the level of the platen roll and farther to the rear of the machine than the platen roll. The supply spool 26 extends substantially from each to the other of plates 21 and 22.

A brake or tension device 28 is provided in association with the supply spool supporting spindle to engage the periphery of the rolled paper supply on the supply spool along a horizontal line located forward of and below the spindle. The brake 28 comprises a flat sheet steel or other metal plate having a forwardly and downwardly bent upper edge portion 28<sup>a</sup> and a forwardly and downwardly turned lower edge portion 28<sup>b</sup>. A cylindrical paper-guiding steel or other metal shaft 29 extends horizontally and transversely of the machine across the rear face of the brake 28 a short distance below the bent upper edge of said brake, said brake being fastened to said shaft by screws 30 threaded into the shaft, and said shaft having reduced end portions journaled in bracket side plates 21 and 22 adjacent the upper edges of said plates. The shaft and the upper edge of the brake are located behind and parallel to the platen roll and slightly above and behind the paper table 16. A steel or other metal tie rod 31 extends between the bracket plates 21 and 22 between the bracket crossbar 23 and the brake 28 and is secured to said plates by screws 32. A pull spring 33 is anchored at its ends to the rod 31 and the upper end portion 28<sup>a</sup> of brake 28 to urge the lower end portion 28<sup>b</sup> of the brake against the rolled supply of paper 25 on the supply spool.

The improved machine is also provided with means whereby the paper, as it is printed upon during actuation of the machine, is rewound upon a rewind spool for preservation as a permanent printed record and/or to prevent the inconvenience incident to discharge from the machine of a long length of printed paper, which means now will be described.

Each of the bracket side plates 21 and 22 has an elongate vertical slot 34 therein which ends downward from its upper edge partway to and directly above the spindle 27. A heavily weighted rewind spool is provided which has a heavy metal core 35, preferably formed of steel, and a cylindrical wooden sheath or sleeve 36 tightly fitted on said core against rotation relatively thereto. The sleeve portion of said spool is provided throughout its length with a paper end receiving slot 37 which extends from the periphery of said sleeve to said core tangentially to the periphery of the core. The core is formed with reduced portions 35<sup>a</sup> of round cross section forming trunnions slidably and rotatively fitting in slots 34 in plates 21 and 22. The main body portion of the spool 35-36 extends substantially from each to the other of plates 21 and 22, and one of the trunnions 35<sup>a</sup> of the spool is formed with an integral and knurled knob or finger wheel 38 to facilitate handling of the spool and manual rotation of the spool. Finger wheel 38 is located outside of plate 22 at the same, or right hand, side of the machine as the knurled end 27<sup>b</sup> of the spindle 27 for the supply spool 26. The rewind spool is thus free to turn and also to slide vertically in slots 34, and said spool, or the spool and printed paper wound thereon, is adapted to rest by gravity on the supply spool or paper wound on the latter.

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A paper supporting table, formed of sheet steel or other metal and having a flat top 39 and a pair of legs 40 integral with said top, is pivotally mounted on the bracket side plates 21 and 22 by means of a pair of shouldered pivot screws 41 each threaded into a different one of said plates and extending through a bearing aperture in a different one of said table legs. Screws 41 are located forward of the slots 34 in the bracket plates, and preferably about mid-length of the slots, and support the table for swinging thereof about a horizontal axis extending transversely of the machine parallel to the axes of the platen roll and the supply and rewind spools. The shortest distance from the pivotal axis of the table to the table top is sufficiently great to permit the table to be swung from a position in which its top is behind the bracket 21-22-23 to its normal position shown in full lines in Figure 1 and to a downwardly depressed position shown in dotted lines in Figure 1.

In the normal position of the table 39-40, the table legs extend downwardly and rearwardly to the pivot screws 41, and the table top 39 faces upwardly and is located between the rewind spool and the table 20 on the platen supporting frame 13 to support the paper 25 printed face uppermost throughout the width of the paper and throughout a substantial length of the paper to permit an operator to write upon the printed portion of the paper. In the construction shown, the table top 39 measures about 1 5/8" from front to rear. In the normal position of the table, the front edge of the table top 39 is preferably located close to the rear edge of table 20. In the normal position of table 39-40, its top 39 is located a substantial distance above the underlying upper edge portions of bracket plates 21 and 22 to permit rocking of the table top downward and forward into the position shown in dotted lines in Figure 1 for withdrawal of rewind spool 35-36 from engagement with slots 34 with a full supply of paper from the supply spool rewound upon the rewind spool.

The table 39-40 is supported and releasably latched in its normal position by an upstanding latch lever 42 which is located at the left hand side of the machine at the outer side of bracket plate 21. The latch lever has a hub 42<sup>a</sup> intermediate its ends which is journaled on a stud 43 fixed to and projecting outward and horizontally from plate 21. The hub spaces the body portion of the latch lever from the plate 21 to clear the left hand table leg 40, and a split retainer ring 44 is engaged with the stud 43 to hold the lever on the stud. A pull spring 45 extends downward and forward from a stud 46 fixed to the lower arm of the latch lever and is anchored to a stud 47 secured to and extending inward from the side plate 21 of bracket 21-22-23. Stud 46 extends through a clearance slot 48 in plate 21 and is engageable with the rear end edge of the slot to limit release movement of the latch lever. The spring 45 normally holds the upper arm of the latch lever 42 rocked rearward against a stop stud 49 projecting outward from and fixed to plate 21.

The latch lever 42 has, in its rear edge adjacent its upper end and above stop stud 49, a forwardly extending notch 50 separating two downwardly and rearwardly inclined rear cam edge portions 51 and 52 of the latch lever, which notch may, if desired and as shown, be downwardly and forwardly inclined. In the normal position of the latch lever, the notch 50 is located in rear

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of the vertical plane in which lies the pivotal axis of the latch lever. The left hand one of the table legs 40 has fixed thereto and extending horizontally outward therefrom a stud 53 which, in the normal position of the latch lever, is engaged in notch 50 to positively hold the table 39-40 against depression from the normal position of the latter. The upper arm of the latch lever has fixed thereto and projecting outward therefrom a stud-like finger piece 54 adapted to be grasped by an operative to rock the latch lever to free stud 53 from notch 50.

The table 39-40 also serves, in combination with its latching lever 42, to releasably hold or latch the rewind spool 35-36 against accidental detachment from the machine during handling or transportation of the machine while leaving said spool free to rotate and move up and down relatively to the supply spool 25 during use of the machine. For this purpose each of the legs 40 of the table 39-40 is formed with an integral rewind spool retaining arm 55-55<sup>a</sup>. The arms 55-55<sup>a</sup> in the normal position of the table extend across the respective slots 34 adjacent the open upper ends of the slots to block movement of the rewind spool trunnions 35<sup>a</sup> out of the slots. In the construction shown, each arm is shaped to hook-like form with a main body or shank part 55 and an angularly extending terminal hook part 55<sup>a</sup>. In the normal position of the table, parts 55 of the arms extend upward from the leg pivots 41 at the outer faces of plates 21 and 22 with said parts 55 located forward of slots 34 and with parts 55<sup>a</sup> extending rearward across the respective slots 34 adjacent the open upper ends of the slots to block movement of the rewind spool trunnions 35<sup>a</sup> out of the slots. The strong latch spring 45 holds the latch 42 in normal position against accidental release with the latch engaged with the table 39-40 to hold the latter against accidental up and down movements from its normal position.

From the foregoing, it will be obvious that by rotation of the platen in paper line spacing direction (counterclockwise as the machine is viewed in Figure 1), a desired length of paper may be fed past the printing line of the platen and corresponding lengths of paper will be respectively unwound from the supply spool and wound on the rewind spool. For satisfactory driving of the rewind spool from the supply spool, it is desirable that the rewind spool be fairly heavy and of fairly large diameter. A fairly large diameter for the rewind spool is desirable for effective torque to rotate this spool without slippage. A rewind spool of fairly heavy weight is desirable for non-slipping frictional driving of the spool. It is, however, undesirable to impose too heavy a load upon the line spacing mechanism of the machine. Accordingly, a metal and wood rewind spool such as shown has been provided, and a spool with a steel core of  $\frac{5}{8}$ " diameter and a wood sheath of  $1\frac{1}{8}$ " diameter has been found satisfactory and is shown.

After being printed upon, the paper is fed printed face uppermost over the top of the writing table 39-40 before being wound upon the rewind spool so that an operator may make written notes, etc., upon the printed portion of the paper. In the construction shown, the table top 39 measures  $1\frac{1}{2}$ " from front to rear and is somewhat wider than the length of the supply and rewind spools which, in the construction shown, are  $2\frac{1}{4}$ " long.

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The slots 34 are sufficiently long, preferably about 2", as shown, to extend well above and below the trunnions 35<sup>a</sup> of the rewind spool, when the spool is empty and rests on a full supply spool, so that the supply spool is free to rise and fall as required during reeling of the paper from the supply spool onto the rewind spool. This arrangement also permits use of the rewind spool with supply rolls of tape of different diameters.

The latch 42 normally holds the writing table 39-40 against both up and down movement from the normal position of the table shown in full lines in Figure 1, said latch being held in latching position by the stiff spring 45. The engagement of stud 53 in latch notch 50 to the rear of the vertical plane in which lies the pivotal axis of the latch permits very heavy downward pressure on the writing table without tending to release the latch.

To facilitate initial threading of paper from the supply spool under the platen and over the table 16 and feed roll 17, before attachment of the paper to the rewind spool and mounting of the latter in the machine, the writing table 39-40 may be unlatched and swung over rearwardly until its top is behind the bracket 21-22-23. When said table is swung back to normal position, the stud 53 will engage and ride down the cam edge 51 of the latch 42 and force the latch toward release position until said stud reaches notch 50, whereupon the spring 45 will snap the latch into latching position and the latch will arrest and hold the table in normal position.

To mount or demount the rewind spool, the operator rocks the latch 42 to released position and holds it there, whereupon the writing table 39-40 drops by gravity into the position shown in dotted lines in Figure 1, where it is arrested by engagement of stud 53 with the lower part of cam edge 52 of the latch and by the engagement of stud 46 with the rear end edge of slot 48. In this position of the writing table, both the arms 55-55<sup>a</sup> are entirely forward of slots 34 and an empty rewind spool may be mounted in the machine or a full rewind spool may be demounted from the machine. The downward movement of table 39-40 from normal position carries the table top both forward and downward away from the rewind spool. Upon release of the depressed writing table, the spring 45 restores the latch to normal position and the cam edge 52 of the latch cams the table up into normal position, whereupon the stud 53 again becomes engaged in latch notch 50 to latch the table.

The brake 28 prevents overrunning or excess and accidental spinning of the supply roll of paper. If any undesirable slack should develop in the paper between the platen and rewind spool, it can be taken up by manually rotating the rewind spool by knob 38.

It will be noted that simple, inexpensive and efficient means very compactly arranged have been provided for the purposes desired to be accomplished.

Although we have thus described our invention in the best form of which we are aware, it will be evident to those skilled in this art that many changes and modifications might be made without departing from the spirit of our invention. We desire to be limited, therefore, only by the scope of the appended claims.

We claim:

1. In a recording machine of the class described, the combination with a rotatively

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mounted and horizontally disposed platen and means associated therewith for feeding a record-receiving paper web, of a pair of fixed supports behind and spaced longitudinally of the platen and each having an up and down extending bearing slot therein which is open at its upper end, a web rewinding spool extending between said supports and having fixed trunnions at its ends slidably and rotatively fitted in said bearing slots and withdrawable through said open ends of the slots, means releasably engaged with said supports for journaling a web supply spool for rotation between said supports about a fixed horizontal axis which is so located that the rewinding spool and paper reeled thereon will be supported by the supply spool and paper reeled thereon and with the axes of the spools parallel to the platen, a supporting table for the web having a flat top and a pair of supporting legs, means mounting the legs of said table on said supports for movement of the table from a position in which the table top faces upwardly between the platen and rewinding spool to support the web and the table legs extend across said bearing slots adjacent the open ends of the slots and block passage of the rewinding spool trunnions into and out of said slots to a position in which the entire table is located to one side of said slots out of the path of insertion and removal of the rewinding spool, and means for releasably holding the table in the first-mentioned one of said positions.

2. A recording machine, as claimed in claim 1, wherein the means for releasably holding the table in said first-mentioned position comprises a manually releasably latch mounted on one of said supports and biased to latch the adjacent leg of the table.

3. A recording machine, as claimed in claim 1, wherein the legs of the table are pivoted to the supports for downward swinging of the table about an axis parallel to that of the platen from the first to the second one of said positions, and the table legs have extensions at the opposite side of their pivotal axis from the table top for movement forwardly of the bearing slots when the table is swung to said second position.

4. In a recording machine of the class described, the combination with a rotatively mounted and horizontally disposed platen and means associated therewith for feeding a record-receiving paper web, of a web rewinding spool having fixed trunnions at its ends, a pair of fixed, up and down extending elongate bearings for

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said trunnions which are open at their upper ends for passage of the trunnions into and out of said bearings to permit mounting and demounting of said spool and also are behind and spaced longitudinally of the platen, means for releasably journaling a web supply spool for rotation about a fixed horizontal axis which is so located that the rewinding spool and paper reeled thereon will be supported by the supply spool and paper reeled thereon and with the axes of the spools parallel to the platen, a web supporting table having a flat top and a pair of legs, means pivotally supporting the table legs for swinging of the table bodily about an axis parallel to the platen and forward of said bearings, a latch pivoted to swing about an axis parallel to the pivotal axis of the table and biased to a normal latching position, and a stud on one of the table legs, said latch having a notch in which said stud is engageable to support the table against downward swinging movement from a normal position, and the legs of the table having extensions movable therewith from across the upper ends of said bearings when the table is swung downward from latched position.

5. A recording machine, as claimed in claim 4, having means to positively limit release movement of the latch, and a cam surface on said latch which extends downward from said latch notch for engagement with the stud while the table is depressed to limit depression of the table and to cam the table up to normal position when the table is released of depressing force.

6. A recording machine, as claimed in claim 5, wherein the table is swingable rearwardly about its pivotal axis to a position in which the table top is behind the journaling means for the spools, and said latch has a second cam surface extending upward from the latch notch for contact by the table leg stud as the table is swung to normal position from the last-mentioned table position.

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