

May 19, 1931.

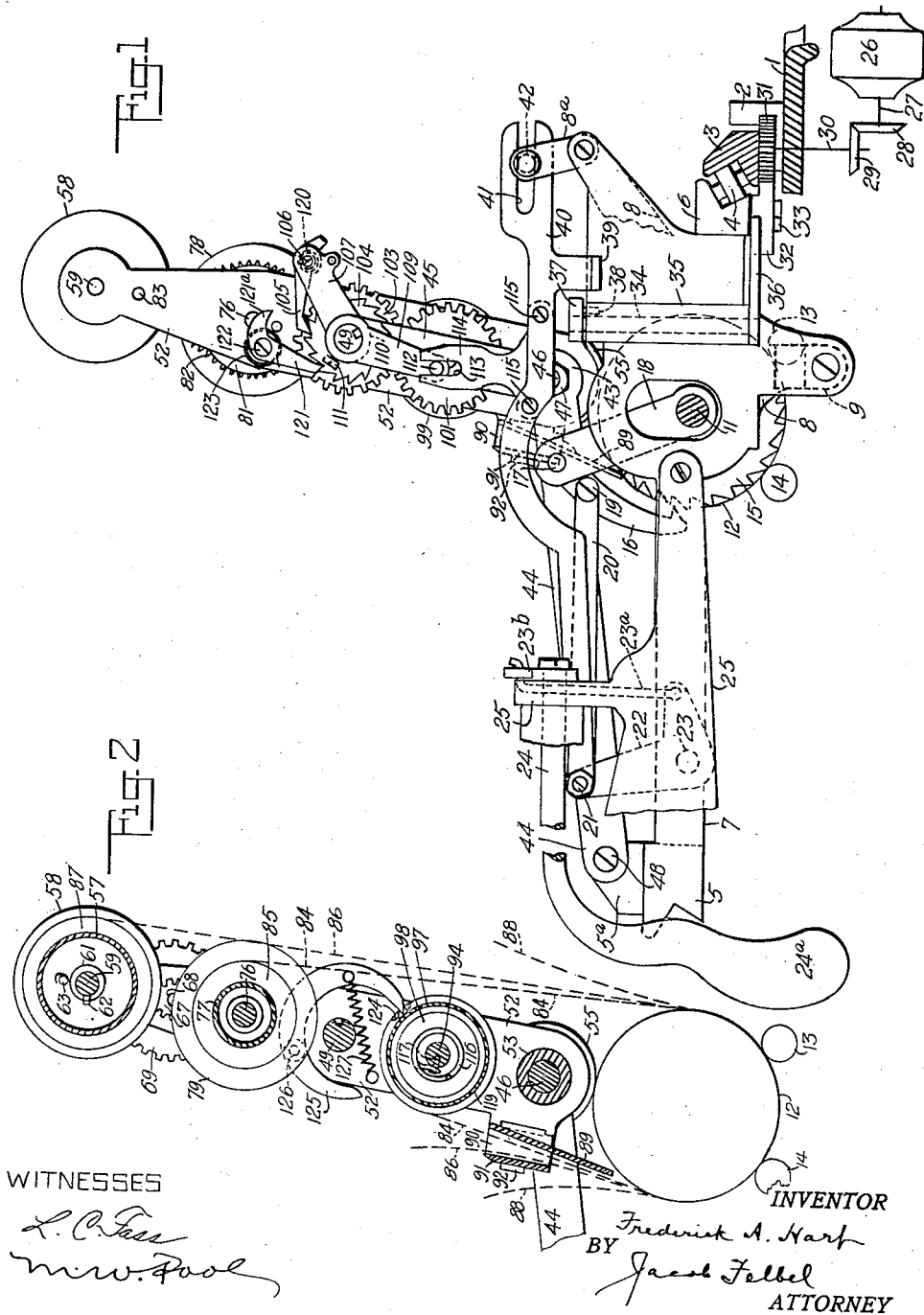
F. A. HART

1,806,200

TYPEWRITING MACHINE

Filed Feb. 19, 1927

2 Sheets-Sheet 1



May 19, 1931.

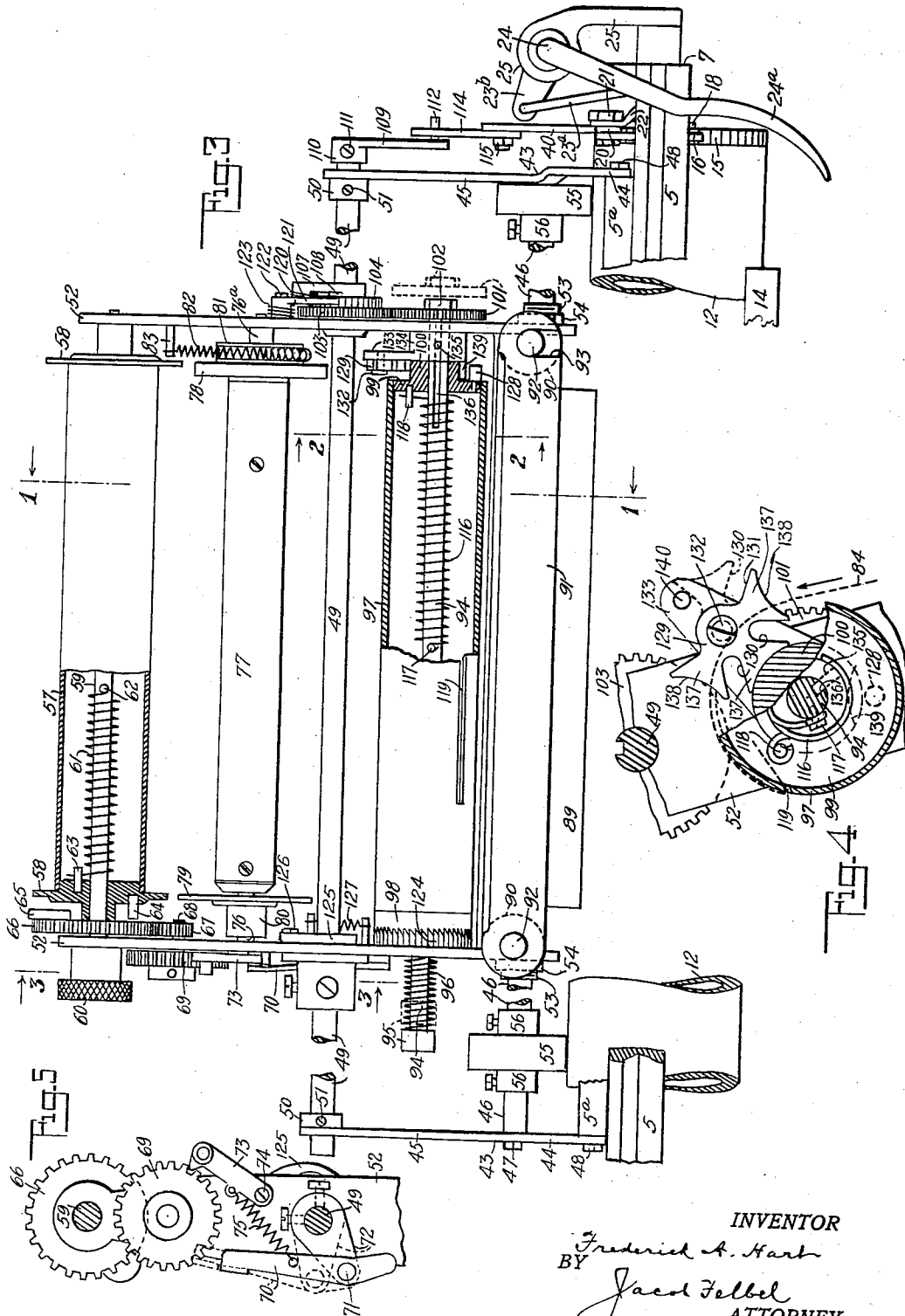
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Filed Feb. 19, 1927

2 Sheets-Sheet 2



UNITED STATES PATENT OFFICE

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TYPEWRITER COMPANY, OF ILION, NEW YORK, A CORPORATION OF NEW YORK

TYPEWRITING MACHINE

Application filed February 19, 1927. Serial No. 169,560.

My present invention relates to paper feeding and controlling mechanism for typewriting machines, and its object is to provide new and improved mechanism of this character. More specifically my invention has to do with tally roll mechanism and its general purpose is to produce improved tally roll mechanism which overcomes defects of prior constructions.

My invention was more particularly designed to improve certain features of the tally roll mechanism disclosed in my Patent No. 1,488,242, dated March 25, 1924, although the present invention is not restricted in its application to the prior construction. In the prior patented construction the tally mechanism comprised rotary holders for both the paper and the carbon strips, the paper and the carbon both being advanced when the platen was turned or line spaced by means of the regular carriage feed rolls in cooperation with the platen. There was also provided a take-up or receiving device for the tally strip in the form of a rotary carrier or holder, having connections with the platen through a pair of friction driving rolls. This frictional connection was satisfactory in operation when the carriage was turned by the usual line spacing handle. However, the tally mechanism is frequently employed in connection with typewriting machines provided with electrically driven line spacing and carriage returning mechanism such as disclosed in my prior Patent No. 1,567,590, dated December 29, 1925, and, when so employed, develops certain defects which the present invention was designed to overcome. Under an electric or power operation it sometimes happens that a rather abrupt, jerky rotary line spacing movement is communicated to the platen such as to cause the frictional connection between the platen and the tally receiving roll to slip, resulting in the tally strip winding on the receiving roll irregularly or defectively. Accordingly, in my present construction the frictional connection has been dispensed with, having been replaced by a spring take-up which is constantly effective, the result being that when the platen is rotated and the paper or tally strip is fed from it, the receiving roll will always take up the slack whatever the extent of feed may be. In order that the spring mounted receiving roll shall perform its functions effectively, it is necessary that it should have the proper amount of initial spring tension, and to this end the take-up spring within the tally roll is given a suitable initial adjustment or tension. To maintain this tension and prevent the spring from running down, stop mechanism is provided comprising a stop on the tally receiving roll and a cooperating stop on its shaft. This shaft receives rotary movements when the line space mechanism of the machine is operated and has a gear connection with the tally receiving or take-up roll, the purpose of the construction being to put into the spring at each line spacing operation substantially as much tension as is taken out by the rotation of the tally roll to take up the slack when the tally strip is fed or line spaced from the platen. In other words, the purpose is to energize the spring so as to maintain it as nearly as possible under an effective or operating tension. Owing however, to the continuously increasing diameter of the take-up roll as the tally strip winds on it the extent of rotation of said roll will be progressively lessened, with the result that the stop on the tally roll will move correspondingly less and less at each line spacing operation. Since the cooperating stop on the roll shaft receives substantially a constant extent of turning movement the result will be that there will occur a progressively increasing distance between the two cooperating stops, eventually resulting in the shaft stop catching up with the roll stop. It will be seen that as a consequence of this variation in the extent of rotation of the shaft and the tally roll, the roll spring connected at its opposite ends to these two parts will be wound up tighter and tighter and that should said spring be allowed to wind up to the limit the elastic or yielding connection between the tally roll and its shaft will be done away with, a result corresponding in effect to what would occur should the two stops be brought into effective engagement. It will be ap-

parent that if the roll be forced to turn correspondingly to its shaft at any time after a considerable amount of paper has been wound on it there will be danger of the paper being rent or torn between the tally roll and the platen, owing to the tally roll attempting to wind on a greater amount of paper than is fed to it from the platen. With the sort of spring employed in the present embodiment of my invention I have found it practicable to allow the shaft stop to catch up with and pass the tally roll stop a plurality of times without overwinding the spring, and accordingly I have provided a shaft stop in the form of a Geneva stop, the final arrest not taking place until there have been three revolutions of the shaft stop relatively to the tally roll stop. This is sufficient to allow the tally receiving roll to be sufficiently filled with the written tally wound thereon. After this written portion of the tally strip has been removed from the receiving roll and preliminary to a fresh start, the tally roll shaft, which is mounted for endwise displacement to disconnect from the line spacing mechanism, is pushed in, thereby enabling the tally roll to be automatically retracted so that the parts may start anew from initial position.

To the above and other ends which will hereinafter appear my invention consists in the features of construction, combinations of devices and arrangements of parts hereinafter described and particularly pointed out in the claims.

The invention will be described and explained in detail in connection with the accompanying drawings wherein

Fig. 1 is a fragmentary end view partly in section showing the carriage of a Remington typewriting machine, Model 23, embodying my invention.

Fig. 2 is a fragmentary vertical sectional view taken on a plane indicated by the section line 1—1 in Fig. 3 and looking in the direction of the arrows at said line.

Fig. 3 is a fragmentary front elevation, partly in section, of Fig. 1, some of the parts shown in Fig. 1 being omitted.

Fig. 4 is a fragmentary vertical sectional view drawn to an enlarged scale taken on a plane indicated by the section line 2—2 in Fig. 3 and looking in the direction of the arrows at said line, some of the parts being shown in different positions.

Fig. 5 is a fragmentary vertical sectional view taken on a plane indicated by the section line 3—3 in Fig. 3 and looking in the direction of the arrows at said line.

Referring to Fig. 1, the top plate 1 or upper frame work of the Remington typewriting machine is provided with short lugs to which are secured grooved guide rails, one rear lug 2 and the rear guide rail 3 being shown. The guide rails cooperate through anti-friction rollers 4 with the front and rear grooved

bars 5 and 6 of a rectangular carriage truck that further comprises connecting end bars 7. Shiftably mounted on the carriage truck is a platen frame comprising end bars 8 and a connecting cross bar 9, the platen frame providing a support for the axle members and of a cylindrical platen, the right-hand axle member 11 of said platen 12 being shown. Cooperative with the platen are the usual paper feeding devices comprising main and secondary feed rollers conventionally illustrated herein and numbered respectively 13 and 14, these feed rollers being releasable but normally cooperating with the platen to feed or advance the paper thereover when the platen is turned. Operatively connected with the right-hand end of the platen 12 is a line spacing ratchet wheel 15 with which cooperates a line spacing pawl 16 pivoted at 17 on a carrier 18 rotatably mounted on the right-hand axle member 11. Said pawl is connected at 19 to a link 20 extending forward and connected at 21 to a bell crank lever 22 pivoted at 23 to the right-hand end bar 7. A wire link 23^a connects the bell crank 22 to a crank arm 23^b fixed to a spring-pressed rock-shaft 24 mounted in a bearing member or bracket 25 detachably secured to the end bar 8, said rock shaft terminating forwardly in a downward extension or handle 24^a whereby the line spacing pawl 16 is operated through the described train of connections to communicate line spacing movements to the platen 12. Said handle is also effective to restore the carriage manually from left to right. In addition to the manually operated line spacing devices above described there are also provided power devices or electrical means for actuating the pawl 16 to line space the platen. The electrically operated power devices are preferably of the sort fully disclosed in my aforesaid Patent No. 1,567,590 and will be briefly described in connection with Fig. 1 wherein certain of the parts in the electrical train are diagrammatically illustrated. The electric line spacing means comprises an electric motor 26 which is connected by a shaft 27 with a beveled gear 28 that intermeshes with a beveled gear 29 secured to the lower end of a vertical shaft 30 carrying at its upper end a spur gear wheel 31 which meshes with a rack bar 32 that is arranged at the underside of the rear bar 6 of the carriage truck from which it is supported by headed screws 33. These screws pass freely through slots in the rack bar and are threaded into the bar 6, thus allowing of a sliding independent endwise movement of the rack bar 32 before it starts to drive or transmit movement to the platen carriage from the motor 26 to restore it from left to right. This independent movement effects the automatic line spacing. A vertical shaft 34 is mounted on a bracket secured to the right-hand end bar of the carriage, said shaft carrying at its lower end a

crank arm 36 which lies in the path of the rack bar 32 and is adapted to be engaged by the right-hand end thereof. At its upper end the shaft 34 carries a leftwardly extending arm or crank 37 having a pin 38 which stands in the path of a lug or ear 39 bent off horizontally from a reciprocating bar 40, the forward end of which is pivotally connected at 21 to the bell crank 22. The rear end of the bar 40 is formed with a guide slot 41 which engages a pin 42 that bridges a guide slot formed in an upward extension 8^a from the rear of the platen frame near the right-hand end bar 8 thereof, the rear end portion of the bar 40 being guided in the slotted extension 8^a. When the electrical connection is effected at the end of a line of writing motion is transmitted through the described train of connections from the motor 26 to the shaft 34, causing the crank 37 at the upper end of said shaft to swing rearward, thus bringing the pin 38 into engagement with the ear 39 of the bar 40 and moving said bar longitudinally rearward. The movement of the bar actuates the bell crank 22, the link 20 and the pawl 16 causing the said pawl to cooperate with the ratchet wheel 15 to line space the platen. The bar is returned to normal position by the usual means including the spring (not shown) connected to the line spacing rock shaft 24. As heretofore stated this electrically operated line spacing mechanism sometimes effects an abrupt or jerky movement of the platen in a rotary direction.

Referring to the tally roll mechanism proper, the support for the tally rolls comprises angular brackets 43 having horizontally disposed arms 44 and upright arms 45, the two brackets being connected by a cross rod 46 clamped to the brackets by nuts 47. The arms 44 extend forward to the usual scale bar 5^a on the front bar 5 of the carriage truck and receive pivot screws 48 which are threaded into said scale bar. The tally mechanism proper is mounted on the cross rod 46 which is disposed above the platen and on a rock shaft 49 which bears in openings in the arms 45 and is adapted to turn freely in its bearings but is held against endwise movement by collars 50 fixed to the shaft by set screws 51. The tally strip contrivance may be adjusted along the supports 46 and 49 to any desired position longitudinally of the platen. The contrivance aforesaid comprises frame plates 52 connected by a sleeve 53 which fits over the rod 46 and is held rigid with the frame plates 52 by nuts 54. Mounted on the rod 46 near its ends are metal rollers 55 which are adapted to bear rotatively on the upper surface of the platen, thus providing a support for the tally frame, said disks being held against endwise movement in any desired way, as by collars 56. The sub-frame 52, 53 provides a support for the several rotary carriers or mandrels com-

prised in the tally contrivance, there being three of such carriers, one for delivering or supplying the tally strip, another for receiving or taking up the tally after it has been fed around the platen and written upon, and, third, a carrier for the roll of transfer material or carbon paper. Said third carrier is arranged at the top of the sub-frame, the tally supply carrier being arranged next below and the take-up carrier being lowermost. The carbon carrier and the means for controlling it are of the general construction disclosed in my prior Patent No. 1,488,242 aforesaid, and need be but briefly described. Said carrier is in the form of a spool comprising a core portion or sleeve 57 and heads or flanged members 58 secured in the ends of the sleeve and perforated to bear on a spindle or shaft 59 supported at its ends in the frame bars 52 (Figs. 2 and 3). Outside the left-hand frame bar 52 the shaft 59 may be provided with a thumb piece 60 for manual operation. The carbon holder 57, 58 is spring mounted on the shaft 59, said shaft being surrounded for part of its length by a coiled spring 61, one end of which is anchored to a pin 62 on the shaft, the opposite end of said spring being connected to a pin 63 projecting inward from the left-hand head 58. Said spring tends constantly to turn the holder to wind the carbon paper thereon. When the platen is line spaced the carbon will be drawn off the roll holder in opposition to the spring, and when the feed roller release mechanism is actuated the carbon will be freed so that it will be rewound on the holder as the latter is turned by said spring, the rewinding motion continuing until a stop pin 64 projecting outward from the left-hand head 58 engages with a relatively fixed stop 65. The position of the stop 65 is automatically variable so as to vary the point of arrest of the carbon roll holder on rewinding. Said stop 65 is mounted on a gear wheel 66 which is supported on the shaft 59 inside the left-hand end bar 52, said gear wheel meshing with a pinion 67 carried by a stub shaft 68, said shaft bearing in and projecting outward beyond the end bar 52 and providing a support outside said end bar for a toothed wheel 69 (Figs. 3 and 5). The wheel 69 is adapted to be actuated to vary the position of the stop 65 by pawl mechanism comprising a pawl 70 pivoted at 71 on a crank arm 72 secured to the rock shaft 49. In the construction disclosed in my prior patent, when the feed rolls 13 and 14 are released by the usual release key (not shown) the shaft 49 which is connected to said release key by devices disclosed in said patent will be rocked, thus moving the pawl 70 from the full line to the dotted line position in Fig. 5 and communicating a corresponding extent of movement to the stop 65.

However, it is sometimes desirable, as

where single line bills are being written, to actuate the variable setting mechanism for the stop 65 independently of the feed roll release key. This alternative construction has been shown in the present case, wherein I dispense with the connection between the release key and the rock shaft 49 and have instead made use of the connection between the shaft 49 and the line spacing mechanism, as hereinafter described, to vary the position of the stop 65. A holding pawl 73 is pivoted at 74 to the frame plate or side bar 52 and is maintained constantly in engagement with the toothed wheel 69 by a coiled spring 75 which connects the pawls 73 and 70 (Figs. 3 and 5).

The tally supply roll is mounted on a rod or spindle 76 and a trunnion or bearing projection 76^a which are supported in the frame plates 52 below the carbon roll (Figs. 1-3). The tally supply roll comprises a core or hub portion 77 and flanges or heads 78 and 79. The flange 78 may be secured to the right-hand end of the core in rigid relationship therewith. The flange 79 at the left-hand end of the holder is preferably independent of the core for convenience in applying the tally roll to and removing from the holder. Said head 79 is provided with an outwardly extending hub 80 which bears loosely on the shaft 76. Rigid with the head 78 is a grooved disk 81 disposed at the right of said head 78. Seated in the groove in said disk is a coiled friction spring 82 having its ends anchored to a pin 83 projecting inward from the right-hand frame plate 52. The spring 82 acts as a drag or brake to prevent undue turning of the supply roll and consequent overfeeding of the paper or tally strip. Said strip, indicated in Fig. 2 by the dotted line 84, is led off from the tally roll 85 at the rear side thereof and extends downward in front of the carbon strip or transfer material 86 which is also led off from the roll for the carbon or transfer material 87 at the rear side thereof. The two strips or sheets 84 and 86 are led down at the rear of the platen 12 and between it and the feed rollers 13 and 14. The bill sheet indicated by the dotted line 88, is introduced in the usual way outside said strips. The bill sheet as is well understood receives the impressions of the typebars from the usual inking ribbon not shown, these impressions being duplicated on the tally strip 84 at the front side of the platen through the carbon strip 86. The tally strip 84 and the carbon strip 86 pass upward at the front of the platen over a guide plate 89 secured at its ends to the frame plates 52. Forward of the guide plate and spaced therefrom by washers 90 is a severing blade 91. The left-hand end thereof is pivoted on a rivet 92 which secures the left-hand washer in place. The right-hand end portion of the blade 91 is slotted, as indicated at 93, to fit over a corresponding rivet

92 associated with the right-hand washer 90. The space between the plate 89 and the blade or plate 91 provides a guide slot through which the tally strip and carbon strip are led, the free end of the bill sheet passing outside of said slot. The forward end of the carbon strip is left free so as not to interfere with the rewinding of the carbon on its roll when released from the platen while the forward end portion of the tally strip is secured to a receiving roll holder on which the written portion of the tally is wound, said roll holder and associate parts embodying the main features of my present invention.

The receiving roll holder for the tally strip is mounted on a shaft 94 (Figs. 2 and 3) which is rotatively and slidably supported in the frame plates 52. The shaft 94 projects outwardly beyond said frame plates at both of its ends. The left-hand end of said shaft is provided with an enlargement or head 95 which forms a convenient means for pressing it rightward as hereinafter described. Between said head and the adjacent frame plate 52 a spring 96 is coiled around the projecting portion of the shaft and tends constantly to press it leftward in its bearings.

The receiving holder for the tally strip comprises a tube or sleeve 97, which at its left-hand end has secured to it a head 98 bearing on the shaft. The right-hand end of the tube likewise receives a head 99 having an outwardly projecting hub 100, the head proper fitting in the tube and being secured thereto, the hub portion being perforated to fit over and bear on the shaft. Outside the right-hand frame plate 52 the projecting end portion of the shaft 94 carries a gear wheel 101 which is secured in place by a nut 102. Said gear wheel is comprised in a train of mechanism which connects the shaft 94 with the line spacing mechanism heretofore described. Said train further comprises a gear wheel 103 arranged above the gear 101 and intermeshing therewith, the gear wheel 103 being loosely mounted on the rod 49 outside the right-hand frame plate 52. Rigid with the gear wheel 103, and outside the same, is a ratchet wheel 104. Constantly engaged with said ratchet wheel is a pawl 105 pivoted on a screw pivot 106 secured to the end portion of a crank arm 107 having a hub 108 that is keyed to the rock shaft 49 (Figs. 1 and 3). Said shaft at its right-hand end projects beyond the bracket arm 45 and has secured to it a crank arm 109. Said crank arm has a hub 110 which fits over the rock shaft 49 and is secured thereto by a set screw 111. The crank arm projects downward and at its free end carries an outwardly projecting pin 112 which engages loosely in a slot indicated at 113 formed in the upper end portion of an arm or extension 114 which is secured by screws 115 to the bar or member 40 of the line space mechanism. It will be understood

that when the bar 40 is operated by either of the dual means heretofore described, that is, either manually or by power, its motion will be transmitted through the slot and pin connection 113, 112 to the crank arm 109, thereby rocking the shaft 49 and actuating the pawl 105 which cooperates with the ratchet wheel 104 to actuate the gear train 103, 101 and turn the shaft 94. The shaft 94 and the take-up or receiving carrier 97—99 having a spring connection as hereinafter described, this motion communicated to the shaft 94 by either of the dual line spacing means will be effective on said spring connection. It will be borne in mind that the shaft 49 is likewise connected with the actuating mechanism for the variable stop 65 so that the turning of the shaft 49 is effective both on the tally take-up mechanism and also on the variable stop mechanism for the carbon roll holder. After actuation, the rock shaft 49 is restored to normal position by the bar 40 whose return movement is transmitted to the shaft by the pin and slot connection 112, 113.

The connection between the shaft 94 and the receiving holder 97—99 is provided by a wire spring 116, which, as clearly shown in Fig. 3, is coiled around the shaft inside the tube 97. One end of said spring is secured to a pin 117 projecting radially from the shaft while the opposite end is secured to a pin 118 projecting inward from the head 99. The spring tends constantly to turn the roll holder to wind the tally strip 84 thereon, the direction being indicated by the arrow in Fig. 4. The tube 97 is formed with a longitudinal extending slit or narrow opening 119 which receives the free end of the tally strip 84 and holds it in place by friction. Said slit preferably does not extend through the full length of the tube and the side portions of the tally strip near its ends are folded so as to narrow the tally strip sufficiently to enable it to be passed into the slit. As best seen from Fig. 4 the slit is not cut radially but is so disposed that it engages the end portion of the tally strip at such an angle to the line of pull as to prevent it from being accidentally withdrawn from the tube 97. The tally strip is wound on the roll holder 97—99 at the front side thereof, as shown in Fig. 2, and the spring 116 tends constantly to turn the roll holder in clockwise direction as viewed in said Fig. 2, or in the direction of the arrow, Fig. 4, when viewed from the left. The inner end of the spring connected to the shaft 94, is prevented from unwinding normally by reason of the fact that said shaft is held through the gear connection 101, 103 and the pawl 105 and ratchet 104. The pawl 105 is provided with a spring 120 wound around its pivot 106, which spring tends constantly to maintain the pawl engaged with the ratchet wheel 104. A hold-

ing pawl 121 is likewise provided for said ratchet wheel, said pawl being pivoted at 122 to the adjacent frame bar 52. Said pawl is also provided with a spring 123 which is wound around its hub portion and tends to keep the pawl engaged with the ratchet wheel. The pawl 121 is provided with a tail portion 121^a whereby it may be conveniently released from the ratchet wheel. The left-hand end portion of the tube 97 is formed on its outer face with a series of ratchet teeth 124 providing a ratchet wheel with which cooperates an arc-shaped holding pawl member 125 that is pivoted at 126 to the inner face of the left-hand frame plate 52 (Figs. 2 and 3). A coiled spring 127, connected to said frame plate and to said pawl, tends constantly to maintain the rear prong or sharpened end portion of the pawl member engaged with the ratchet 124. Bypassing against the forward horn or prong of the pawl member 125 the spring 127 may be overcome and the pawl released or disconnected from the ratchet wheel. The pawl and ratchet 125, 124 are effective to prevent unwinding of the tally strip from the take-up holder when the platen is rotated backward. The shaft 94 may be pressed endwise towards the right to the dotted line position illustrated in Fig. 3 to disconnect the gear wheel 101 from the gear wheel 103. Normally, however, the spring 96 maintains said gear wheels connected as shown.

Assuming that the spring 116 is given a sufficient initial tension, it will be apparent that when the platen is turned in line spacing direction the tally strip will be correspondingly fed over the platen by reason of the cooperation therewith of the feed rollers 13 and 14 and that the spring mounted holder 97—99 will tend to turn to wind the tally strip thereon, thus taking up the slack. The line spacing movements of the platen are constant or unvarying, while the turning movement of the take-up tally roll will vary in correspondence with the amount of paper or completed tally strip wound thereon. If then, at the start, the tally roll turns to wind on an amount equal to that fed from the platen this turning movement will constantly lessen as the amount of paper wound on the roll increases. This complicates the matter of providing stop devices for the tally roll spring. Such devices are, of course, necessary to prevent the initial spring tension from being lost when either end of the spring is free to unwind. Since one end of the spring is connected to the tally roll and the other end of the spring is connected to the tally roll shaft, the coasting stop devices must be secured one on or relatively to the shaft and one on or relatively to the tally roll. In the present construction the tally roll stop is in the form of a pin 128 projecting outward from the head 99 of the holder (Figs. 3 and 4). The co-

operating stop on the shaft 94 is preferably in the form of a Geneva stop for purposes hereinafter explained. Said Geneva stop 129 is provided with two recesses 130 and with a final stop face 131. The Geneva stop is pivoted at 132 to the inner face of a crank arm 133 having a hub 134 which fits over the shaft 94 and is disposed between the hub 100 and the inner face of the right-hand frame plate 52. The Geneva stop overlies the hub 100 and is disposed in the path of the pin 128. The crank or support 133, 134 has a pin and slot connection with the shaft 94 on which it is mounted. A pin 135, projecting inward through the hub 134, engages in an elongated slotway 136 formed longitudinally in said shaft. The connection is such that the crank is forced to participate in turning movements of said shaft carrying with it the Geneva stop. Said crank, however, does not interfere or participate in endwise movements of said shaft when it is pressed to the right to disconnect the gear train 101, 103. The portions 137 of the stop 129 which are formed between the recesses 130 have their outer faces curved as indicated at 138 in conformity with the outer surface of the hub 100. One or another of the curved faces 138 is in contact with the surface of said hub 100 during the greater part of the bodily traveling movements of the stop 129 around the axis of the shaft 94 as a center. Consequently the stop 129 will at such times be locked or prevented from turning on its axis 132. In order to permit such turning movements of the stop 129 when it operatively engages with the coacting stop 128, the hub 100 is formed opposite said pin stop 128 with a recess or depression 139. This is of sufficient depth to permit the stop 129 to turn when in engagement with the pin 128, but after said stop 129 has thus been turned in the recess 139, said stop passes out of the recess and one of its curved faces 138 will again interlock with the curved surface of the hub 100. An arresting stop in the form of a pin 140 projects from the crank 133 into the path of the Geneva stop 129 limiting turning movements thereof about the pivot 132 under actuation of the stop 128. It will be apparent that the turning movements of the shaft 94, received when the line spacing mechanism is actuated through the described train of connections including the gears 101 and 103, are constant or unvarying, while the movements of the tally holder 97—99 to take up slack progressively decreases as the size of the tally roll increases. Consequently if the stops 128 and 129 are in engagement at the start of operations, it will be apparent that since the stop 128 will gradually slow up, the stop 129 moving at a constant rate will gradually leave said stop 128. As the line spacing operations or turning movements of the platen are continued, the stop 129 will advance step-by-step around the axis 94, moving in the direction of

the arrow, Fig. 4 and will catch up with the stop 128, engaging with it on the side opposite from the initial engagement. As a result of the coaction between the two stops, the stop 129 will be turned one step on its pivot 132 in a manner well understood, thus being permitted to pass the stop 128. The Geneva construction will permit the stop 129 to pass the stop 128 twice in this way before being finally arrested by said stop. This final arrest is due to the fact that the stop 129 is prevented from turning on its pivot 132 by the engagement of the stop face 131 with the stop 140. The parts are so proportioned and constructed that when this final arrest takes place the tally roll holder 97—99 will contain what its known as a "run" of work. Hence the operator may now disconnect the roll holder from its operating train by pushing in the finger piece 95, allowing the spring 116 to turn the tally roll in reverse direction until the stops 128 and 129 contact in initial position. Thereupon the printed portion of the tally thus unwound is torn off against the severing knife or blade 91 and withdrawn from the slot 119. Next a fresh portion of the tally 84 is drawn off the supply roll 85 and its free end passed into the slot 119 to connect it with the receiving roll holder 97—99, after which the operations above outlined may be resumed. The tension in the spring 116 will, of course vary to some extent between the two extremes, that is, between the initial tension and the final tension which is stored in the spring, through the energizing means operated automatically by the line-spacing mechanism when the stops 128 and 129 engage arrestingly. However, this variation is within practicable limitations, so that the operation of the spring 116 is never over-wound and the take-up mechanism is in effect the same at the initial stage and the final stage. It will be seen therefore that as a result of my invention there is provided a take-up mechanism for the tally which is efficient in operation, and is at all stages effective to take up the slack and to maintain the tally strip in a properly taut condition between the platen and the take-up or receiving roll holder.

Various changes may be made without departing from my invention.

What I claim as new and desire to secure by Letters Patent, is:—

1. In a typewriting machine, the combination of a platen, a rotary material-carrying holder, a stop for limiting turning movements of said holder to rewind the material thereon, a sheet-receiving holder, a spring for turning said last named holder, and means for variably setting said stop and also for tensioning said spring.

2. In a typewriting machine, the combination of a platen, a rotary material-carrying holder, a stop for limiting turning movements of said holder to rewind the material thereon,

a sheet-receiving holder, a spring for turning said last named holder, a rock shaft, connections between said rock shaft and said stop, connections between said rock shaft and said spring, and means for actuating said rock shaft.

3. In a typewriting machine, the combination of a platen, a rotary material-carrying holder, a stop for limiting turning movements of said holder to rewind the material thereon, a sheet-receiving holder, a spring for turning said last named holder, a rock shaft connected to said stop and to said spring, and dual means for actuating said rock shaft, said dual means being alternatively effective.

4. In a typewriting machine, the combination of a platen, a rotary material-carrying holder, a stop for limiting turning movements of said holder to rewind the material thereon, a sheet-receiving holder, a spring for turning said last named holder, a rock shaft, connections between said rock shaft and said stop, connections between said rock shaft and said spring, means for turning the platen, and connections between said last named means and said rock shaft.

5. In a typewriting machine, the combination of a platen, a rotary material-carrying holder, a stop for limiting turning movements of said holder to rewind the material thereon, a sheet-receiving holder, a spring for turning said last named holder, a rock shaft, connections between said rock shaft and said stop, connections between said rock shaft and said spring, dual line spacing means, and connections between said dual means and said rock shaft, said dual means being alternatively effective.

6. In a typewriting machine, the combination of a platen, a rotary material-carrying holder, a stop for limiting turning movements of said holder to rewind the material thereon, a sheet-receiving holder, a spring for turning said last named holder, a rock shaft, connections between said rock shaft and said stop, connections between said rock shaft and said spring, hand operated line spacing devices, power-operated line spacing devices, and connections between both said sets of devices and said rock shaft.

7. In a typewriting machine, the combination of a platen, a rotary material-carrying holder, a stop for limiting turning movements of said holder to rewind the material thereon, a sheet-receiving holder, a spring for turning said last named holder, devices for variably setting said stop and for tensioning said spring, hand-operated line spacing mechanism, power-operated line spacing mechanism, and connections between both of said mechanisms and said last recited devices, the two line spacing mechanisms being alternatively effective.

8. In a typewriting machine, the combination of a platen, a rotary material-carrying

holder, a stop for limiting turning movements of said holder, line spacing means for the platen, and connections between said line spacing means and said stop whereby said stop may be variably set automatically by said line spacing means.

9. In a typewriting machine, the combination of a platen, a material-carrying holder, a stop for limiting movements of said holder, a rotary support for said stop, means for line spacing the platen, and operating connections between said line spacing means and said rotary support whereby said support is automatically operated.

10. In a typewriting machine, the combination of a platen, a material-carrying holder, a stop for limiting movements of said holder, a support for said stop, devices for rotating said support including a pawl, a rock shaft for actuating said pawl, means for line spacing the platen, and connections between said means and said rock shaft for automatically actuating said rock shaft.

11. In a typewriting machine, the combination of a platen, feed roller devices cooperative therewith, a carbon roll holder, a spring for turning said roll holder when the carbon is released by said feed roller devices, a stop for limiting turning movements of said roll holder under the action of its spring, a rotary support for said stop, devices for rotating said support, line spacing mechanism for the platen, and connections between said line spacing mechanism and said devices whereby said devices are automatically actuated from the line spacing mechanism.

12. In a typewriting machine, the combination of a platen, feed roller devices cooperative therewith, a carbon roll holder, a spring for turning said roll holder when the carbon is released by said feed roller devices, a stop for limiting turning movements of said roll holder under the action of its spring, a rotary support for said stop, devices for rotating said support including a rock shaft, dual means for line spacing the platen including a bar, and connections between said bar and said rock shaft.

13. In a typewriting machine, the combination of a platen, feed roller devices cooperative therewith, a carbon roll holder, a spring for turning said roll holder when the carbon is released by said feed roller devices, a stop for limiting turning movements of said roll holder under the action of its spring, a rotary support for said stop, devices for rotating said support including a rock shaft, dual means for line spacing the platen including a bar, a crank arm on said rock shaft, and a pin on said crank arm engaging a slotted extension on said bar.

14. In a typewriting machine, the combination of a rotary platen, a delivery roll holder, a receiving roll holder, feed roller devices cooperative with the platen when it is

turned to draw paper from the delivery roll holder, line spacing mechanism for turning the platen, spring mechanism connected with the receiving roll holder to take up slack in the paper when it is fed from the platen, and automatically controlled connections between said spring mechanism and said line spacing mechanism.

15. In a typewriting machine, the combination of a rotary platen, a delivery roll holder, a receiving roll holder, feed roller devices cooperative with the platen to draw paper from the delivery roll holder, line spacing mechanism for turning the platen, a spring connected with the receiving roll holder, and automatically operating connections between said spring and said line spacing mechanism.

16. In a typewriting machine, the combination of a platen, a spring mounted roll holder for taking up paper fed from the platen, stop devices for limiting movements of said roll holder under control of its spring, and means for automatically controlling said stop devices to maintain suitable operating tension on the roll holder.

17. In a typewriting machine, the combination of a platen, a take-up roll holder for paper, a spring for tensioning said roll holder, stop devices for maintaining suitable tension in said spring, and means for regulating the action of said stop devices and said spring.

18. In a typewriting machine, the combination of a platen, a roll holder for paper, a spring for tensioning said roll holder, stop devices for controlling the action of said spring, and means operating automatically to regulate the effect of said spring and of said stop devices.

19. In a typewriting machine, the combination of a platen, a paper roll holder, a spring for tensioning said roll holder, stop devices for controlling the action of said spring, means for regulating the action of said stop devices and said spring, devices for line spacing the platen, and connections between said devices and said last recited means.

20. In a typewriting machine, the combination of a platen, a roll holder, a spring for tensioning said roll holder, stop devices for controlling the action of said spring, said stop devices comprising a Geneva stop and a cooperating stop, and means for regulating the action of said stop devices and the effect of said spring.

21. In a typewriting machine, the combination of a platen, a roll holder for paper, a shaft on which said roll holder is adapted to rotate, a spring connecting said shaft with said roll holder, a stop connected to said roll holder, a cooperating stop connected to said shaft, and means for automatically controlling said stops.

22. In a typewriting machine, the combination of a platen, a roll holder for paper, a

shaft on which said roll holder is adapted to rotate, a spring connecting said shaft with said roll holder, a stop connected to said roll holder, a cooperating stop connected to said shaft, and line spacing devices for the platen, said devices being effective to communicate rotary movement to said shaft.

23. In a typewriting machine, the combination of a platen, a roll holder for paper, a shaft on which said roll holder is adapted to rotate, a spring connecting said shaft with said roll holder, a stop connected to said roll holder, a cooperating stop, a crank arm on said shaft by which said cooperating stop is carried, line spacing devices for the platen, and connections between said line spacing devices and said shaft.

24. In a typewriting machine, the combination of a platen, a roll holder for paper, a shaft on which said roll holder is adapted to rotate, a spring connecting said shaft with said roll holder, a stop connected to said roll holder, a cooperating stop, a crank arm on said shaft by which said cooperating stop is carried, line spacing devices for the platen, and a rock shaft connected to said line spacing devices and also to said roll holder shaft.

25. In a typewriting machine, the combination of a platen, a roll holder for paper, a shaft on which said roll holder is adapted to rotate, a spring connecting said shaft with said roll holder, a stop connected to said roll holder, a cooperating stop, a crank arm on said shaft, said cooperating stop being pivoted on said crank arm, devices for turning the platen step by step, and a rock shaft operative by said devices and to said shaft whereby said stops on cooperating effect a turning movement of said cooperating stop on its pivot.

26. In a typewriting machine, the combination of a platen, a roll holder for paper, a shaft on which said roll holder is adapted to rotate, a spring connecting said shaft with said roll holder, a stop connected to said roll holder, a cooperating stop, a crank arm on said shaft by which said cooperating stop is carried, line spacing devices for the platen, a rock shaft operative by said line spacing devices, and a gear connection between said rock shaft and said feed roller shaft.

27. In a typewriting machine, the combination of a platen, a roll holder for paper, a shaft on which said roll holder is adapted to rotate, a spring connecting said shaft with said roll holder, a stop connected to said roll holder, a cooperating stop, a crank arm on said shaft by which said cooperating stop is carried, line spacing devices for the platen, pawl and ratchet devices connecting said rock shaft with said line spacing devices, and gears connecting said rock shaft with said roll holder shaft.

28. In a typewriting machine, the combination of a platen, a roll holder for paper, a

shaft on which said roll holder is adapted to rotate, a spring connecting said shaft with said roll holder, a stop connected to said roll holder, a cooperating stop, a crank arm on
5 said shaft by which said cooperating stop is carried, line spacing devices for the platen including a reciprocating bar, a rock shaft, a crank arm thereon, pin and slot connections between said crank arm and said bar, and
10 gears connecting said rock shaft with said roll holder shaft.

29. In a typewriting machine, the combination of a platen, a roll holder for paper, a spring for tensioning said roll holder, stop
15 devices for controlling the action of said spring, and means for regulating the action of said stop devices and said spring, said shaft being movable endwise to release said stops when they are interlocked to permit the
20 unwinding of said spring.

30. In a typewriting machine, the combination of a rotary platen, paper feeding means cooperative therewith, a delivery roll holder, a take-up or receiving roll holder for
25 receiving paper fed around and from the platen and from said delivery roll holder, a spring positively connected to said take-up roll holder for turning it, and automatic self regulating means for maintaining suitable
30 effective tension in said spring irrespective of the amount of paper wound on said take-up roll holder and unwound from said delivery roll holder, said automatic means including means acting positively on said spring to
35 wind it and control its tension.

31. In a typewriting machine, the combination of a traveling carriage, rotary platen carried thereby, means cooperative therewith to effect a feed of the paper, a roll holder for
40 receiving paper fed from the platen, a spring for turning said roll holder, line spacing means operable at will independently of a printing operation for intermittently turning the platen and thereby line spacing the
45 paper, and means controlled by the intermittent actuation of said line spacing means for maintaining effectively operating tension in said spring.

Signed at the borough of Manhattan, city
50 of New York, in the county of New York and State of New York this 17th day of February A. D. 1927.

FREDERICK A. HART.

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