

Sept. 20, 1971

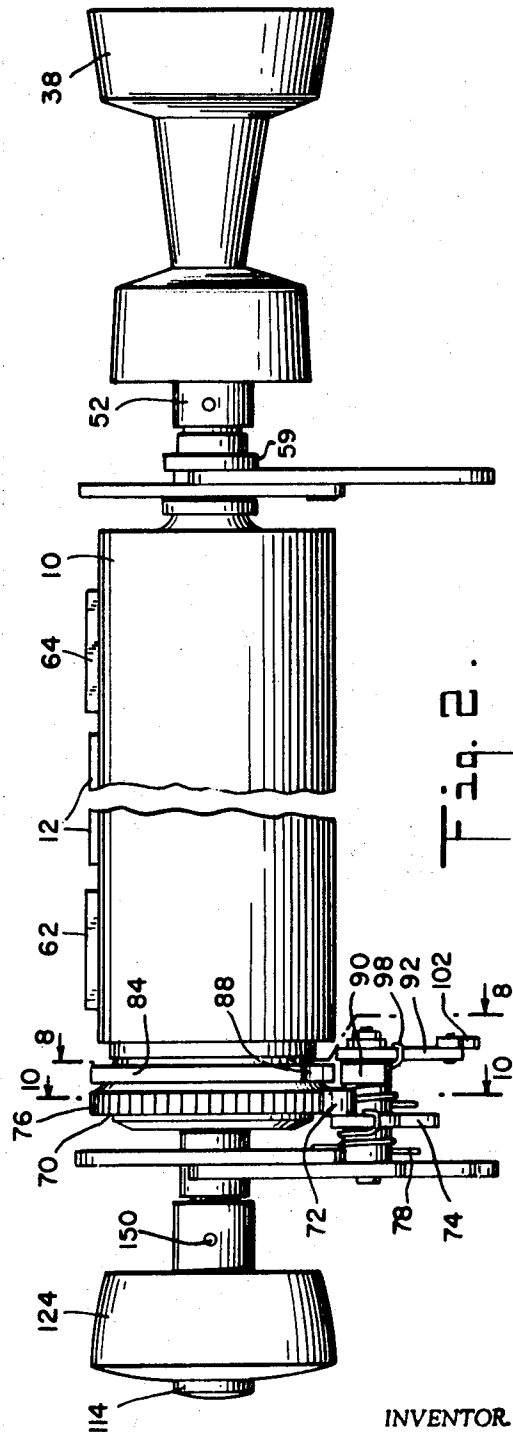
HUGH ST. LAWRENCE DANNATT

3,605,979

LINE INDICATOR FOR TYPEWRITER PLATENS

Original Filed April 27, 1967

3 Sheets-Sheet 1



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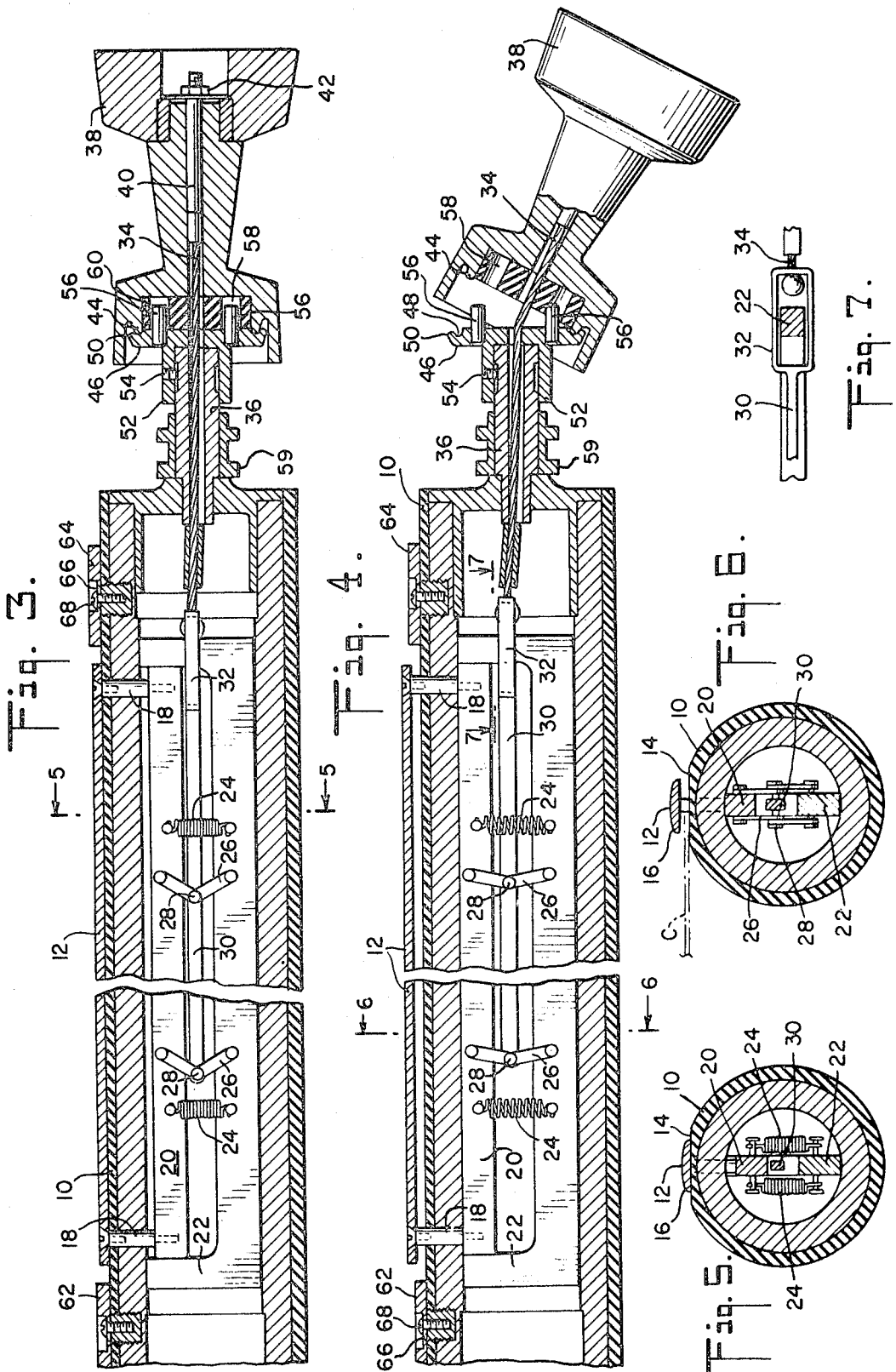
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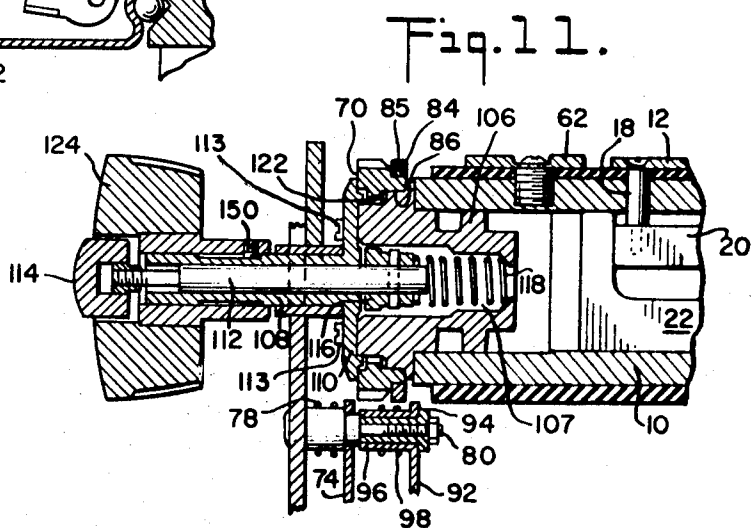
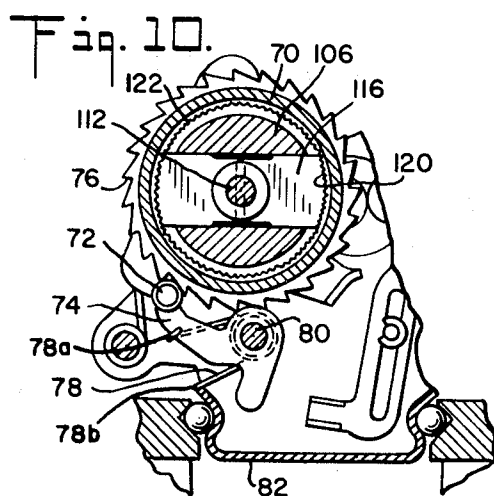
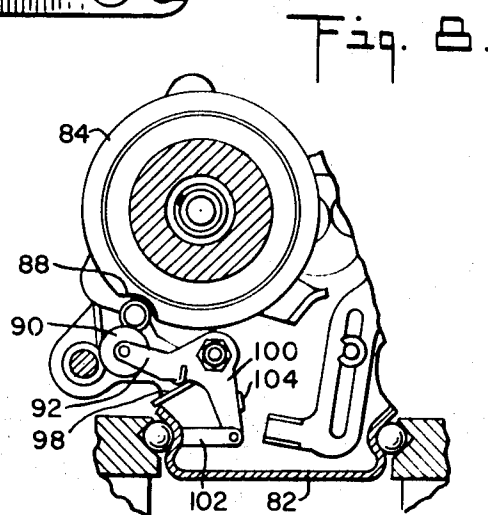
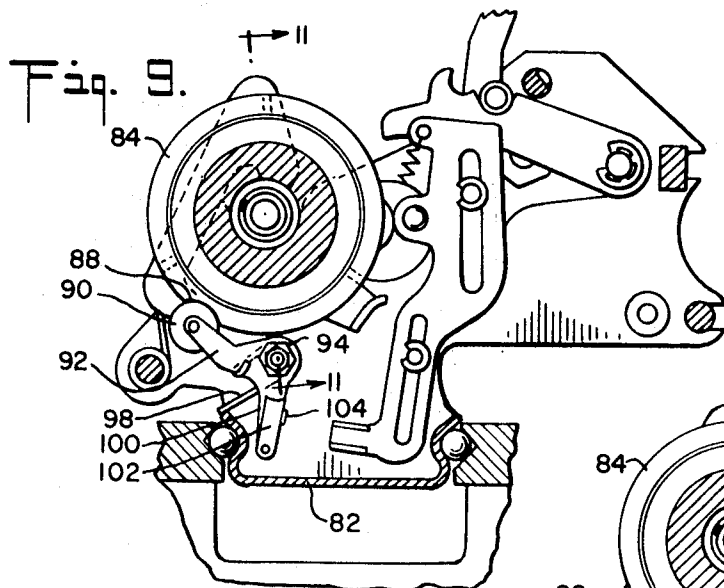
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3,605,979

LINE INDICATOR FOR TYPEWRITER PLATENS
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The Singer Company

Original application Apr. 27, 1967, Ser. No. 634,223, now
Patent No. 3,474,889, dated Oct. 28, 1969. Divided
and this application Oct. 30, 1968, Ser. No. 798,236
Int. Cl. B41j 29/42

U.S. Cl. 197—187

2 Claims

ABSTRACT OF THE DISCLOSURE

A typewriter platen has a card line indicator connected thereto which includes a detent ring having a single detent notch in its periphery which is sensed during platen rotation by a detent roller mounted on the carriage. The detent ring, for the purpose of relative rotational adjustment of the detent ring and card clamp, is made rotatable independently of the platen by mounting it on the line spacing ratchet for rotation with the latter. Release of a line spacing ratchet clutch permits the rotation of the platen without affecting the line spacing ratchet and the detent ring, allowing the notch in the latter to be first rotated into detented position as the platen is rotated and the subsequent rotation of the platen and card clamping bar alone to a desired line position. Whenever, thereafter, the detent roller enters the detent notch, it will be an indication to the operator that a predetermined line of a card held by the card clamp is in proper typing position. The additional torque provided by registration of the detent and detent notch, while producing a clear signal that a desired line position has been reached, is not sufficient to interfere with subsequent conventional line feed functions.

The detent roller is mounted on a pivoted, spring-biased, bellcrank carried by the carriage. A latch finger at one end of the bellcrank can be swung into contact with the carriage frame to disable the detent roller.

CROSS REFERENCE TO RELATED APPLICATION

This is a division of copending U.S. patent application Ser. No. 634,223, filed Apr. 27, 1967, now issued as U.S. Patent No. 3,474,889, on Oct. 28, 1969, to Hugh St. Lawrence Dannatt.

BACKGROUND OF THE INVENTION

The invention relates to typewriting machines and particularly to a printing line indicator associated therewith.

Card holding clamps for typewriter platens are well known.

A new and improved card holding clamp is disclosed in the above-identified copending application. Card holding clamps are frequently used when it is desired to type on relatively short forms or documents which cannot be held in position on the platen by the usual document holding means. In such applications it is not unusual to require that the typing start a predetermined distance from the end of the form. The present invention provides a convenient means for rapidly positioning such a short form on the platen of a typewriter so that typing may begin at any desired predetermined position relative to one end thereof.

It is the primary purpose of the invention to provide a convenient means for positioning forms on a typewriter platen so that the initial line of typing may be started a predetermined distance from the end of the document. It is a more specific object of the invention to provide an auxiliary detent ring and detent for use with a typewriter platen equipped with a card clamping bar and the usual line indexing ratchet, pawl, and detent for providing an

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indication when the platen is at a predetermined and adjustable angle of rotation relative to a reference.

BRIEF DESCRIPTION OF THE DRAWING

The purpose of the invention and its advantages, will be more fully understood by reference to the drawing which illustrates a presently preferred embodiment, when viewed in light of the detailed description to follow. In the drawing, like reference numerals indicate like parts, and:

FIG. 1 is an external plan view of a typewriter platen in which the improvements comprising the present invention are embodied;

FIG. 2 is an external foreshortened elevational view of the platen of FIG. 1 on a somewhat enlarged scale and showing in conjunction therewith related elements of a typewriter carriage;

FIG. 3 is a longitudinal sectional view on line 3—3 of FIG. 1, showing the parts thereof in a repose;

FIG. 4 is a view corresponding to that of FIG. 3 showing, however, the parts thereof operated into clamping bar release position;

FIG. 5 is a transverse cross-sectional view on line 5—5 of FIG. 3;

FIG. 6 is a transverse cross-sectional view on line 6—6 of FIG. 4;

FIG. 7 is a detail on line 7—7 of FIG. 4;

FIG. 8 is a transverse section on line 8—8 of FIG. 2 showing elements thereof in full line and certain detent mechanism in inoperative position;

FIG. 9 is a transverse section similar to that of FIG. 8 showing, however, the detent mechanism in operative position;

FIG. 10 is a transverse sectional view on line 10—10 of FIG. 2 showing parts in full line and illustrating particularly the mechanism associated with a line spacing ratchet; and

FIG. 11 is a longitudinal sectional view on line 11—11 of FIG. 9 showing parts of the left end of the platen mechanism.

The card clamping bar in association with a typewriter platen is shown in FIGS. 1—6 while its associated operating mechanism comprising a principal feature of the invention is best shown in FIGS. 3 and 4, wherein a conventional rubber covered platen 10 has mounted thereon a card clamping bar 12. The card clamping bar 12, as best seen in FIGS. 5 and 6, is mounted on a flat surface 14 of the platen 10 and the bar 12 itself, as shown in these latter views, has an arcuate upper face 16 which is ideally a continuation of the circumference of the platen 10.

The clamping bar 12 is operatively associated with the platen 10 by means of a plurality of guide studs 18 which operate through the platen 10 wall and extend to the interior of the platen 10 where they are connected to an operating bar 20. The operating bar 20 is mounted for radial movement in a guide frame 22 fixed radially within the platen 10. The clamping bar 12 is normally held in firm contact with the face of the platen 10 by means of a plurality of coil springs 24 having one end thereof connected to the operating bar 20 and the other end to the base of the guide frame 22. These springs 24 are so proportioned that the operating bar 20 is drawn toward the base of the guide frame 22 to an extent sufficient to hold the clamping bar 12 against the surface of the platen 10.

When it is desired to release the clamping bar 12 into the position shown in FIG. 4, such release is conveniently effected by manipulating a plurality of toggle levers 26 which are pivoted at their respective ends to the operating bar 20 and the guide frame 22. An intermediate pivot 28 of the toggle levers 26 is connected to a clamp actuating shaft 30 which extends along the axis of the platen 10.

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The clamp actuating shaft 30 (see FIG. 7) terminates at its right end in a yoke 32 which straddles the guide frame 22 and provides a connection for a clamping bar release cable 34. The clamping bar release cable 34 is threaded through a right end platen shaft 36, and therebeyond it is connected to a clamp bar release knob 38. The distal end of the clamp bar release cable 34 is attached to a cable connector 40 (FIG. 3) which extends through the shank of the cable bar release knob 38 where its screw-threaded end in conjunction with a cable tension adjusting nut 42 permits minor adjustments in cable tension.

At this point, it can be seen that if the cable bar release knob 38 is pulled to the right in an axial direction, the clamp actuating shaft 30 will spread the toggle levers 26 with the result that the operating bar 20 is moved outwardly along the radius of the platen 10 and the clamping bar 12 is released. However, since such axial movement of the clamp bar release knob 38 is inconvenient and affords no advantage over the prior art devices, the clamp bar release knob 38 is arranged in joy stick fashion, so that a mere lateral deflection of the knob 38 at any convenient angle will result in the release of the clamping bar 12. To this end, the release knob 38 is connected to the platen 10 by a fulcrumed joint arrangement. Conceptionally, the connection between the two may be in the form of a modified ball and socket joint which has means permitting a relative separation of the ball and socket to apply an axial force to the clamping bar release cable 34, or, as specifically shown in FIGS. 3 and 4 in the form of a disk operating in a cup, without particular regard to which of the elements of the joint are on the release knob 38 or on the platen 10. The cup and disk connection has been selected for illustration and specific description as a preferred embodiment by which the invention may be disclosed advantageously.

In a specific form of the invention here selected for purpose of illustration, the clamping bar release knob 38 has formed therein a cavity forming a cup which provides an annular rib 44 (see FIGS. 3 and 4) adapted to cooperate with a clutch disk 46. The clutch disk 46 has an annular groove 48 (see FIG. 4) therein, defined in part by an annular lip 50 adapted to mate with the annular rib 44. The annular rib 44, in combination with the annular lip 50, constitute a species of joints which permit a 15° to 20° deflection of the clamp bar release knob 38 in any direction in reference to the axis of the platen 10. This relationship and coaction is shown in FIG. 4. When the clamp bar release knob 38 is deflected in any convenient direction, a point along the annular rib 44 and a point on the annular lip 50 coact as a fulcrum about which the release knob 38 may pivot, thereby pulling the clamping bar release cable 34 outwardly and thereby operating the toggle mechanism 26 to release the clamping bar 12.

The clutch disk 46 is formed with an axial hub 52 adapted to fit about the outer end of the right end platen shaft 36 to which it is attached by means of a set screw 54. The conventional bearing sleeve 59 by which the right end of the platen 10 is mounted in the carriage (not shown) is interposed between the inner end of the axial hub 52 and the adjacent end of the platen 10.

Extending outwardly from the clutch disk 46 are a plurality of drive pins 56 which are adapted to enter respective drive pin sockets 58 formed in a clutch plug 60 seated in a minor cavity defined in part by the annular rib 44 of the clamp bar release knob 38. Thus, when in its normal operative position as shown in FIG. 3, the clamp bar release knob 38 will be securely connected to the right end platen shaft 36 through the drive pin sockets 58, the drive pins 56 and the axial hub 52.

A sufficient number of drive pins 56 are provided, preferably equally spaced about the clutch disk 46, so that one or more are always engaged with their respective drive pin sockets 58, without respect to the angle

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at which the release knob 38 is deflected. So arranged, the platen 10 can be rotated even though the release knob 38 is deflected. The clutch pins 56 are securely bonded to the clutch disk 46, and the clutch plug 60, which is preferably made of rubber or other suitable resilient material, is firmly secured in the base of the clamp bar release knob 38.

It should now be evident that operation of the clamping bar 12 into its release position completely eliminates the necessity for generally unnatural motions such as the application of either axial or radial forces as in the prior art, but that its operation can be accomplished by the completely natural deflection of the clamp bar release knob 38 in any convenient direction. Upon such deflection, the clamping bar release cable 34 will be pulled outwardly with the result that the clamp actuating shaft 30 will follow its movement. Such movement of the clamp actuating shaft 30 will spread the toggle levers 26 thus moving the operating bar 20, its attached guide studs 18, and the clamping bar 12 outwardly into the position illustrated in FIGS. 4 and 6. Upon release of the clamp bar release knob 38, it will spring back to its normal position since the clamping bar release cable 34 is under tension by reason of the springs 24. All the drive pins 56 will re-engage the drive pin sockets 58, so that rotation of the clamp bar release knob 38 will effectively rotate the platen 10 during normal platen indexing operation. Concurrently, the return springs 24 will draw the operating bar 20 inwardly toward the axis of the platen 10 with the result that the clamping bar 12 will be in clamping contact with the face of the platen 10.

Preferably, the platen 10 is also provided with card stops 62 and 64 attached to the face of the platen 10 in axial alignment with the clamping bar 12. Such stops 62, 64 are useful in the lateral positioning of the cards (not shown) upon which typing is to be done. The stops 62 and 64 serve as the conventional paper guide found in all typewriter carriages. The position of the card stops 62, 64 may be adjusted by reason of an oblong slot 66 therein provided for an attaching screw 68. The card stops 62 and 64 can be shifted in an axial direction simply by backing off their attaching screws 68 and moving the stops 62 and 64 as required and permitted by the oblong slot 66.

In connection with a card clamp arrangement for typewriter platens, it is highly desirable to provide some means for conveniently locating the first line of the card on which typing is to be performed. Devices for this purpose have been heretofore suggested as in the J.A.B. Smith U.S. Pat. 2,272,098. The arrangement for that purpose herein provided comprises an improvement over the prior patents. The mechanism involved in this feature of the invention is best shown in FIGS. 8-11.

In FIG. 10 of the drawing is shown a conventional line spacing ratchet 70 in conjunction with its detent 72 mounted on a ratchet detent arm 74 which is mounted on the carriage structure. The detent arm 74 is biased against the ratchet teeth 76 by a ratchet detent spring 78 coiled about the detent arm pivot screw 80 and having one end 78a connected to the ratchet detent arm 74 and its other end 78b in abutment with the carriage base 82.

The line spacing ratchet 70 herein has been modified to accommodate a detent ring 84 (see FIGS. 9 and 11) seated on an inwardly projecting flange 86 (FIG. 11) formed on the conventional line spacing ratchet 70. The detent ring 84 at one point in its circumference, as shown in FIGS. 8 and 9, has formed therein a single detent notch 88 which cooperates with a detent roller 90 also mounted on the carriage structure. When the detent roller 90 enters the detent notch 88 as the platen 10 is rotated, it serves as a signal to the operator that the platen 10 has been rotated to a predetermined position which may correspond to the first line of typing on the card being processed. The signal comprises both an audible click when the detent 90 enters the detent notch 88 and in-

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creases the torque required to produce further rotation of the platen 10 until the detent 90 and the detent notch 88 are disengaged from each other.

The detent roller 90 is carried by a detent arm 92 mounted for rocking movement on a pivot sleeve 94 (FIG. 11). This sleeve 94 is supported from the end frame of the carriage by the detent arm pivot screw 80. The detent arm 92 is formed with a hub 96 assembled in bearing relationship to the sleeve 94 for free rocking motion thereon. The detent arm 92, however, is urged toward the detent ring 84 by means of a detent spring 98 which is coiled about the hub 96 and having one end connected to the detent arm 92 and the other end in contact with the carriage base 82 in a fashion similar to the corresponding spring 78 which biases the ratchet detent arm 74.

It will become highly desirable from time to time as, for example, when using a conventional platen to disable the detent roller 90. Providing an arrangement for this purpose is a depending detent latch arm 100 (FIGS. 8 and 9) to the end of which is pivoted a detent latch 102. The latch arm 100 has a laterally extending latch stop 104. In the operative position of the detent arm 92, the latch 102 is manually rotated into contact with the latch stop 104 where it will rest, as shown in FIG. 9. When it is desired to disable the detent roller 90, the detent arm 92 is manually rotated in a counterclockwise direction, as shown in FIG. 8, where it is held in the retracted position by abutment of the detent latch 102 with the carriage base 82.

It should be mentioned that when the detent ring 84 is mounted on the line spacing ratchet 70, the relative rotational position of the two elements 70, 84 must be adjusted to put them in phase with their respective detent rollers 90 and 72. That is to say, before the position of the detent ring 84 is fixed with respect to the ratchet 70, it should be ascertained that the ratchet detent 72 is seated properly and fully in one of the ratchet teeth 76 while at the same time the detent roller 90 is also properly and fully seated in the detent notch 88 of the detent ring 84. When this rotational position is reached, a plurality of circumferentially spaced set screws 85 in the detent ring 84 are screwed down against the flange 86 of the line spacing ratchet 70. This serves to lock the detent ring 84 to the line space ratchet 70 so that the two will rotate together with no relative rotation between them. The two will remain in phase and require no further adjustment.

It is contemplated that the feature may be usefully employed for typing cards within a wide range of lengths. Therefore, to condition the platen 10 for the processing of cards of any given size, the platen 10 and line spacing ratchet 70 are rotated until the detent roller 90 falls into the detent notch 88. The platen 10 is now released from its line spacing ratchet-detent ring assembly 70 and is independently rotatable until the card clamp 12 is in the proper position to present the selected line of a card held thereby at the line typing position. After this position has been reached, the line spacing ratchet-detent ring assembly 70, 84 is again connected with the platen 10 for simultaneous rotation upon normal line spacing operation of the platen 10.

The mechanism provided for this purpose is largely conventional and is shown in FIGS. 10 and 11. The left end of the platen 10 has fixed thereto an end block 106 which extends into the platen 10 and has an exterior surface on which the line spacing ratchet-detent ring assembly 70, 84 is rotatably mounted. The end block 106 has an outwardly opening axial cavity 107. A tubular platen hub 108, having a radial platen end plate 110 at its inner end, is attached to the end block 106 by means of a plurality of screws 113 which extend through the platen end plate 110 and into the end block 106.

A ratchet release shaft 112 is mounted in the platen hub 108 for limited axial movement therein. The outer

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end of the ratchet release shaft 112 has a ratchet release button 114 attached thereto by which the ratchet release shaft 112 may be pressed inwardly. The axial cavity 107 of the end block 106 accommodates the inner end of the ratchet release shaft 112, a clutch bar 116, and a clutch spring 118 which is interposed between the inner end of the ratchet release shaft 112 and the inner wall of the end block cavity 107. The face of the end block 106, as best seen in FIG. 10, is slotted to accommodate the outer ends of the clutch bar 116 which extend through these slots and have formed in the end faces thereof clutch bar teeth 120 and which are normally in engagement with similar teeth 122 formed on the inner face of the annulus comprising the line spacing ratchet 70. From the foregoing, it can be seen that when the ratchet release shaft 112 is in its normal position, as shown in FIG. 11, and the clutch bar teeth 120 are in engagement with the internal teeth 122 of the line spacing ratchet 70, rotation of the platen knob 124 will cause rotation both of the platen 10 and the line spacing ratchet-detent ring assembly 70, 84. Torque for rotation of the platen 10 is transmitted from the platen knob 124 through the platen hub 108 by reason of a spline connection comprising setscrew 150 between the knob 124 and the hub 108. The end block 106 in turn rotates the clutch bar 116 whose teeth 120 normally engage the internal teeth 122 of the line spacing ratchet 70.

When the ratchet release button 114 is depressed against the tension of the clutch spring 118, the clutch bar 116 will be moved deeper into the end block cavity 107 and the clutch will thereby be disengaged from the line spacing ratchet-detent ring assembly 70, 84. The disengagement results from the fact that the clutch bar 116 and its teeth 120 are moved inwardly to a point at which the clutch bar 116 and the ratchet 70 are no longer in driving engagement. Rotation of the platen knob 124 will now rotate the platen 10 without an accompanying positive rotation of the line spacing ratchet-detent ring assembly 70, 84.

When it is desired to condition the platen 10 for the typing of cards of a given size and on a predetermined initial line, the platen knob 124, in its normal position, will be rotated with the resulting rotation of the platen 10 and line spacing ratchet-detent ring assembly 70, 84 until the card clamp 12 is accessible at the front of the carriage. Thereupon the card clamp 12 is released as previously described, and one edge of a card, shown in dot-dash line C in FIG. 6, is engaged under the card clamp 12. Rotation is resumed until the detent roller 90 falls into the detent notch 88. At this point, the ratchet release button 114 is depressed, as above described, releasing the line spacing ratchet-detent ring assembly 70, 84, and the platen 10 alone is further rotated until the selected line on the card registers with the line typing position of the typewriter. The ratchet release button 114 is then released, the clutch bar 116 is thereby re-engaged with the teeth 122 of the ratchet 70 under the influence of the spring 118, and the machine is now conditioned for the subsequent typing of additional cards of the same size and line configuration without further adjustment. Thereafter, when a blank card is engaged under the card clamp 12, the platen 10 and line spacing ratchet-detent ring assembly 70, 84 are rotated as a unit until the detent roller 90 falls into the detent notch 88 which is a signal to the operator that the card is now properly positioned for typing of the first line.

It should be noted that the clutch teeth 120 and 122 are relatively small compared to the ratchet teeth 76. This permits the very fine rotational adjustment of the platen 10 after the detent roller 90 and the detent notch 88 have been engaged with each other.

From the foregoing, it can be seen that the card clamp and the line indicator operate in concert to provide a pair of reference points which greatly facilitate the registration of any selected line of a card at the type line of

a typewriter, thereby speeding the card typing operation far beyond that which would be possible without these aids.

What is claimed is:

1. A character by character printer comprising:
 - (a) a document supporting cylindrical platen supported for rotational motion about the axis thereof;
 - (b) a longitudinal card clamp on the periphery of said platen;
 - (c) line indexing means including a line-spacing 10 ratchet;
 - (d) a detent ring, having a detent notch, coupled to said line-spacing ratchet for rotation therewith;
 - (e) first and second detent rollers spring biased to remain in contact with the periphery of said line-spacing ratchet and said detent ring, respectively; 15
 - (f) adjusting means for rotating said detent ring relative to said line-spacing ratchet, and about their common axis which is coincident with the said axis of said platen, to assure that said first detent roller is engaged with said line-spacing ratchet in a detenting relationship when said second detent roller is engaged in said detent notch; and 20
 - (g) coupling means for selectively engaging and disengaging said line-spacing ratchet and said detent ring from said platen for unified rotation with said platen and to selectively adjust the angle between said detent notch and said longitudinal card clamp to any predetermined value.
2. The mechanism of claim 1, wherein said second 30 detent roller is carried at one end of a pivoted bell-crank

for movement toward and away from said platen, and the other end of said bellcrank has a latch thereon for latching said bellcrank against movement about its pivot when said second detent roller has been moved away 5 from said platen.

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