Oct. 28, 1969 H. ST. LAWRENCE DANNATT 3,474,889

CARD CLAMP FOR TYPEWRITER PLATENS

Filed April 27, 1967 3 Sheets-Sheet 1

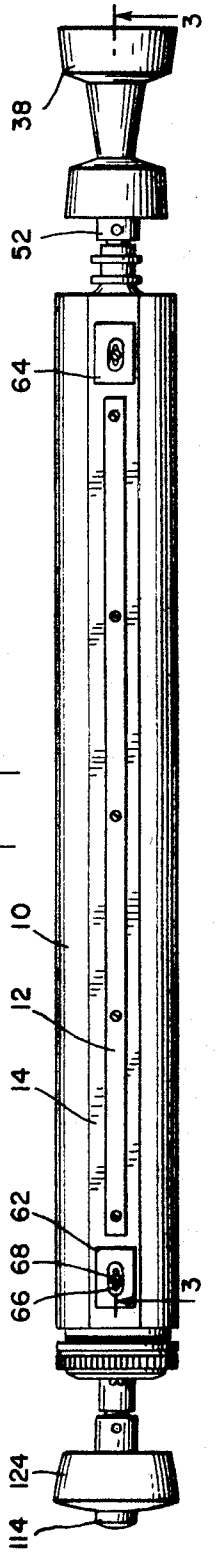


Fig. 1.

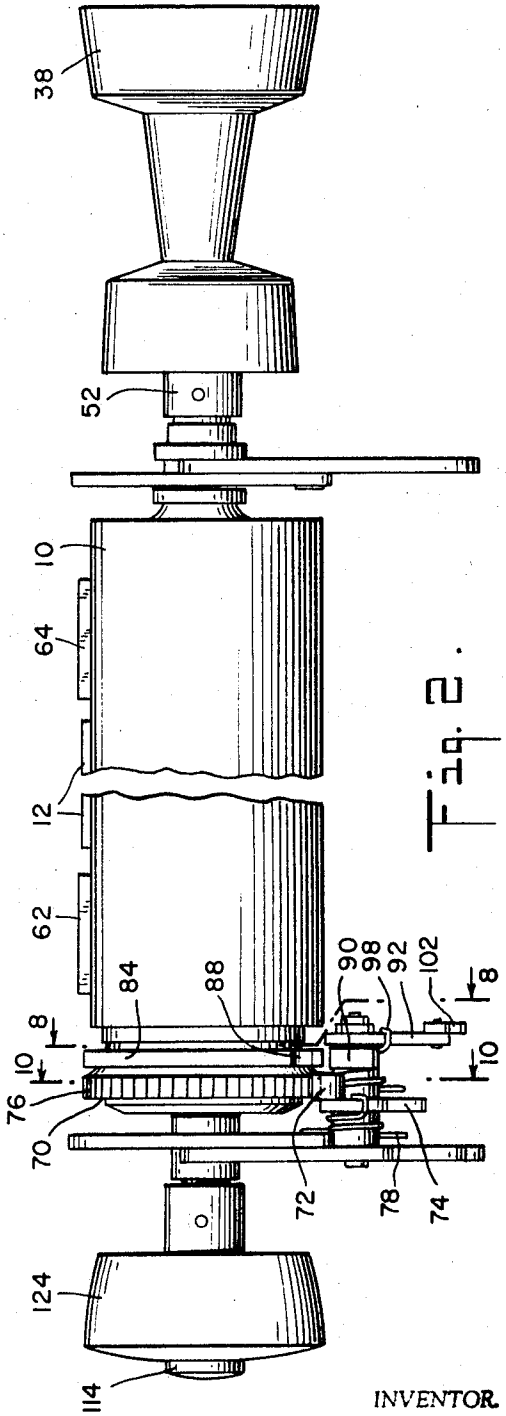


Fig. 2.

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CARD CLAMP FOR TYPEWRITER PLATENS

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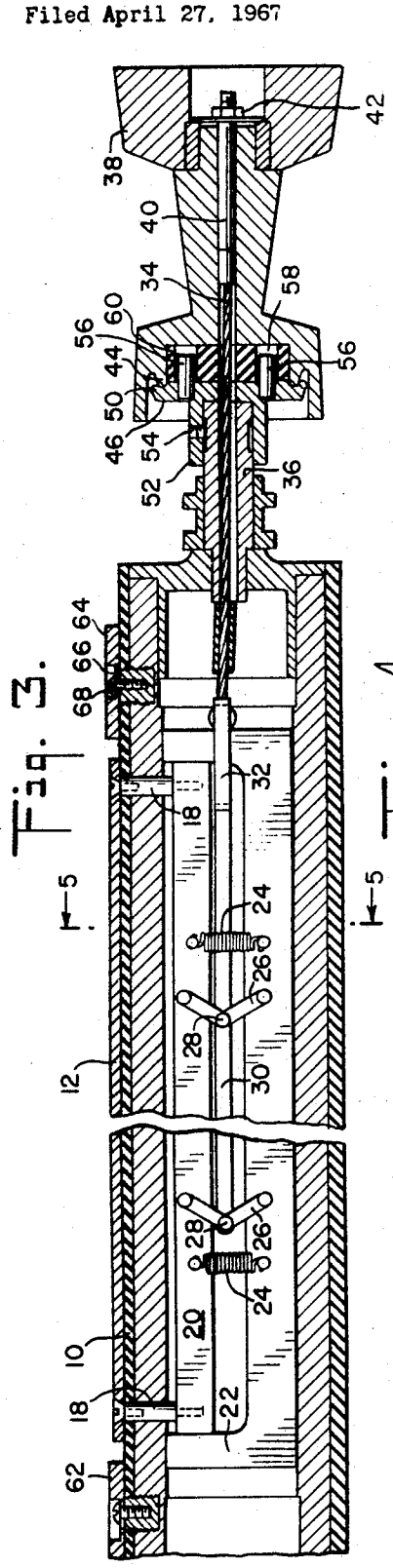


Fig. 3.

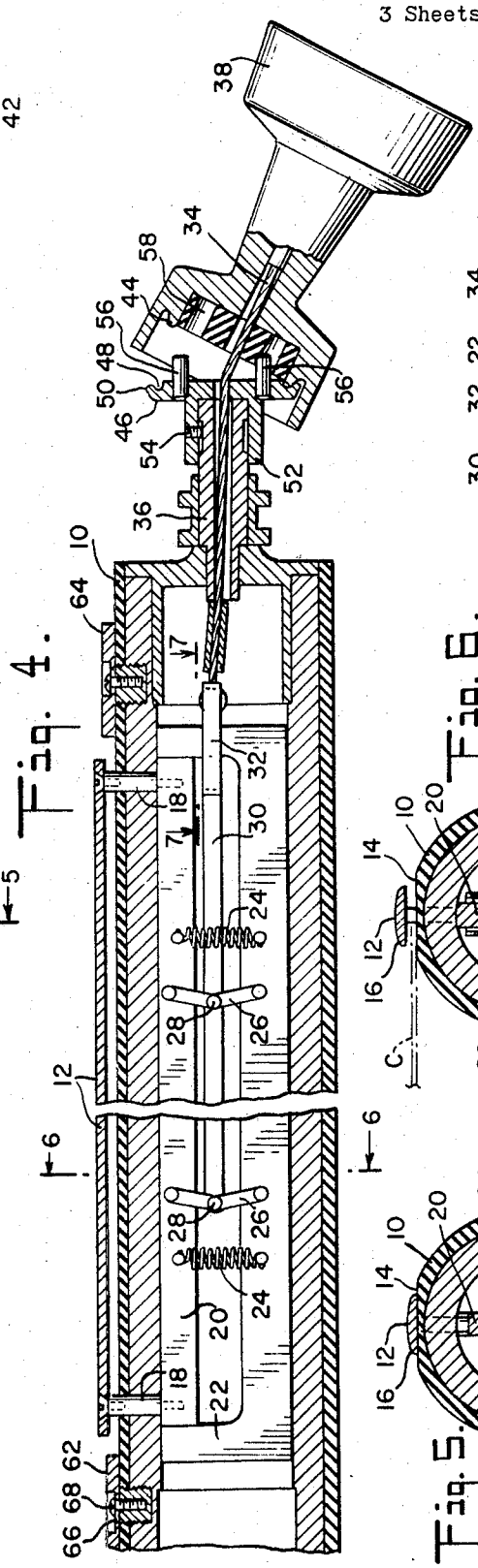


Fig. 4.

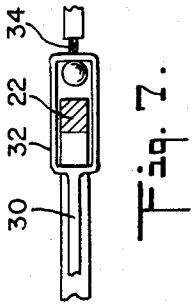


Fig. 7.

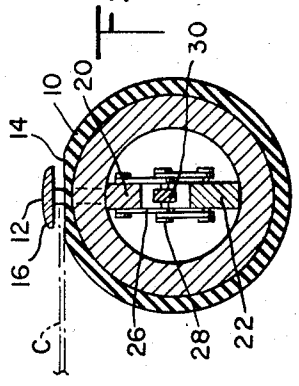


Fig. 6.

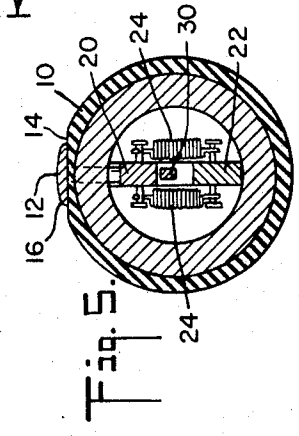


Fig. 5.

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Fig. 9.

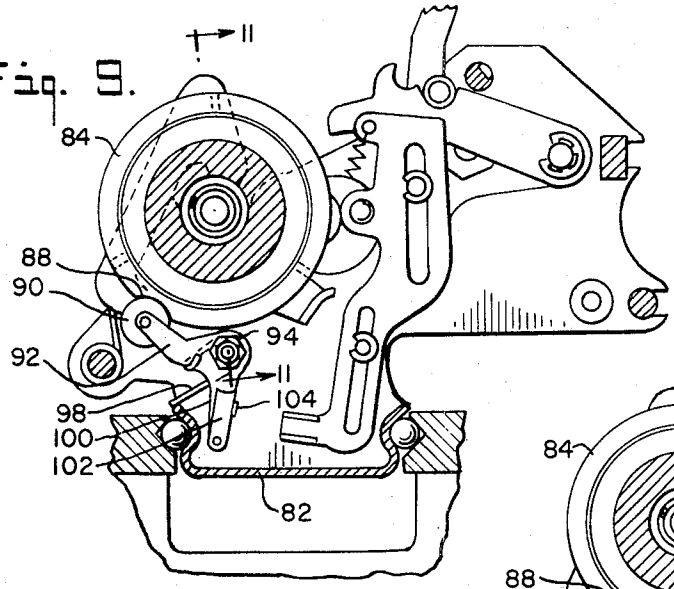


Fig. 8.

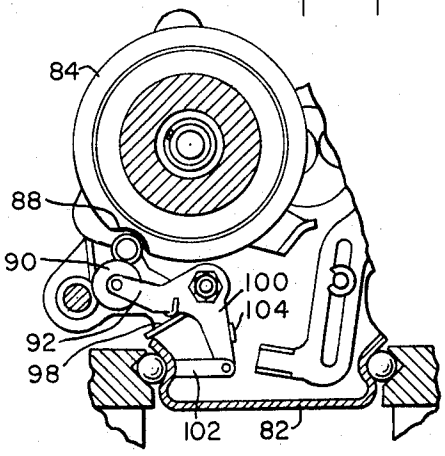


Fig. 10.

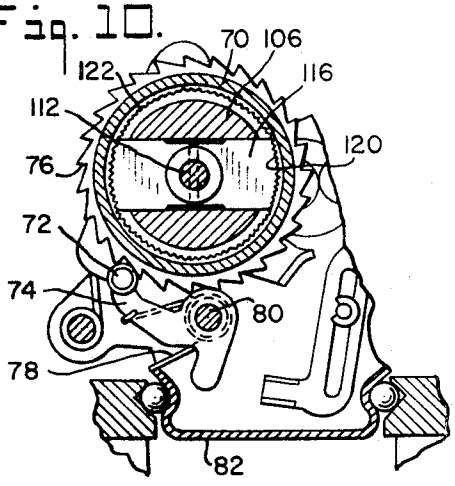
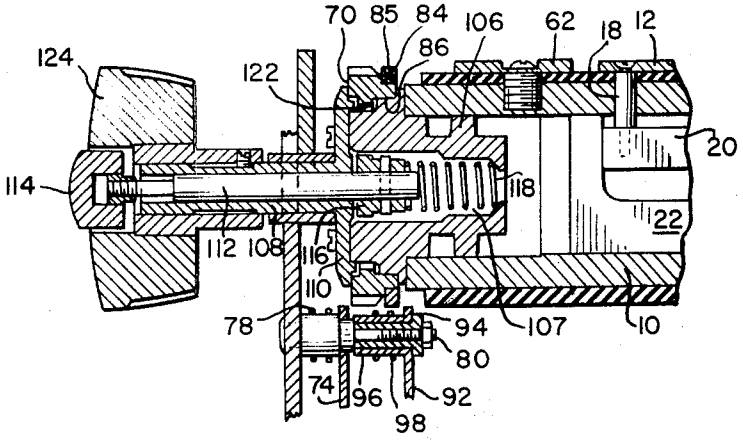


Fig. 11.



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3,474,889

CARD CLAMP FOR TYPEWRITER PLATENS

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Int. Cl. B41j *11/04, 11/24*
U.S. Cl. 197—136 10 Claims

ABSTRACT OF THE DISCLOSURE

A platen with a card clamping bar connected to a toggle link actuating mechanism within the platen. The actuating mechanism releases the clamping bar when an axial force is applied to the toggle link mechanism. A central knob is connected to the platen by means of a joint which permits deflection of the hand knob in any convenient direction and in response to the deflection thereof applies an axial force to the said mechanism. The joint connecting the central knob to the platen comprises a disc within a cup. An annular groove forms a lip about the periphery of the disc which coacts with a corresponding rib formed in the cup. When the knob is deflected, a point on the cup and the lip acts as a fulcrum and the clamp bar release cable is pulled axially to release the card clamping bar. The knob and platen maintain their rotatable connection even though the knob is in a deflected position. The opposite end of the platen has a card line indicator connected thereto which includes a detent ring having a single detent notch sensed by a detent roller and which is mounted on the line spacing ratchet for rotation therewith. Release of a line spacing ratchet clutch permits platen rotation without affecting the line spacing ratchet and the detent ring, allowing adjustment of the card clamp relative to the card line indicator.

BACKGROUND OF THE INVENTION

The invention relates to card holding and feeding mechanism for typewriting machines and particularly to platen carried card holders, and to a printing line indicator associated therewith.

Card holding clamps for typewriter platens are well known. The prior art devices have been operable to release their card clamping bars by applying to the bar actuating mechanism either a radial force in respect to the platen, as in Benner U.S. Patent 2,023,507, or a linear force along the axis of the platen, as in Going U.S. Patent 1,954,894. The application of an operating force in either of these directions involves the movement of the operator's hand or hands which is not as efficient as a mere lateral deflection in any convenient direction of an operating knob.

It is, therefore, the primary purpose of the invention to provide a card clamping bar operator for typewriter platens which is responsive to a lateral deflection of a hand knob in any direction in respect to the axis of the platen.

SUMMARY OF THE INVENTION

The invention consists in the broader as well as the more particular aspects of the card clamping bar, its operating mechanism within the platen, the universally deflectable joint between the bar operating knob and the platen, and the flexible connection between the operating knob and the bar operating mechanism, whereby the bar may be operated by deflecting the operating knob in any convenient direction in reference to the axis of the platen. Additional novel features involved in the invention reside in the separable pin and socket connection between the platen and the operating knob by which

the two are rotatably connected; the particular disk and cup joint providing a fulcrum arrangement, the toggle link clamp bar actuating mechanism, and the line indicator in combination with the clamping bar actuating mechanism; and the line indicator in combination with the clamping bar.

BRIEF DESCRIPTION OF THE DRAWING

The foregoing structures, 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 or 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 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. 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 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 by which the right end of the platen 10 is mounted in the carriage is interposed between the inner end of the axial rub 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 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 opeartion of the clamping bar 12 into its released 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 reengage 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 and 64 are useful in the lateral positioning of the cards being typed, serving the function, as they do, of the conventional paper guide found in all typewriter carriages. The position of the card stops 62 and 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. Patent 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 connected to the ratchet detent arm 74 and its other end 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 increases 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 must be adjusted to put them in phase with their respective detent rollers **90** and **72**, respectively. That is to say, before the position of the detent ring **84** is fixed in 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** 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** 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 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 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 normaly 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**. 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 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**. 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 **112** 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**.

When it is desired to condition the platen **10** for the typing of cards of a given size and 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** 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**, 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 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** 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. In a cylindrical typewriter platen having a tubular body portion, a card clamping bar mounted on the surface of said platen, clamping bar operating mechanism operatively responsive to an axial force within the body of said platen, means extending through the wall of said platen operatively connecting said clamping bar and said operating mechanism, a hand knob, axially movable actuating means connecting said operating mechanism and said hand knob, and a universally deflectable fulcrumed joint connecting said hand knob to one end of said platen, whereby a lateral deflection of said hand knob in any direction is effective to move said actuating means in an axial direction.

2. The mechanism of claim 1, wherein said joint comprises a disk seated within a cup.

3. The mechanism of claim 1, wherein said hand knob has a cup at its inner end and said platen has a disk at an end thereof disposed within the cup.

4. The mechanism of claim 1, wherein separable pins and sockets in said joint connect said hand knob and said platen into rotational relation.

5. The mechanism of claim 1, wherein said joint comprises a disk seated within a cup, said disk has an annular groove forming a lip about the periphery thereof, and said cup has an internal rib coacting with said groove and forming therewith a fulcrum.

6. The mechanism of claim 1, wherein said joint comprises a disk seated within a cup, said cup has a plurality of sockets therein, and said disk has a plurality of corresponding pins extending from its face and into said sockets.

7. The mechanism of claim 1, wherein said actuating means includes a flexible cable extending along the axis of said hand knob and is attached thereto at its free end.

8. The mechanism of claim 1, wherein said operating mechanism includes an operating bar to which said card clamping bar is connected, and a plurality of toggle links supporting said operating bar.

9. The mechanism of claim 1, wherein said operating mechanism includes an operating bar to which said card clamping bar is connected, a plurality of toggle links supporting said operating bar, and a connection between said axially movable actuating means and the intermediate joint of said toggle links.

10. The mechanism of claim 1, wherein said operating mechanism includse an operating bar to which said card clamping bar is connected, and said operating bar is mounted in a guide frame for radial movement within said platen.

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ERNEST T. WRIGHT, JR., Primary Examiner

U.S. Cl. X.R.

197—114, 123, 144, 187