Aug. 30, 1966 J. F. SMATHERS 3,269,511

TYPEWRITER CARRIAGE POSITIONING MECHANISM

Filed Aug. 12, 1963 4 Sheets-Sheet 1

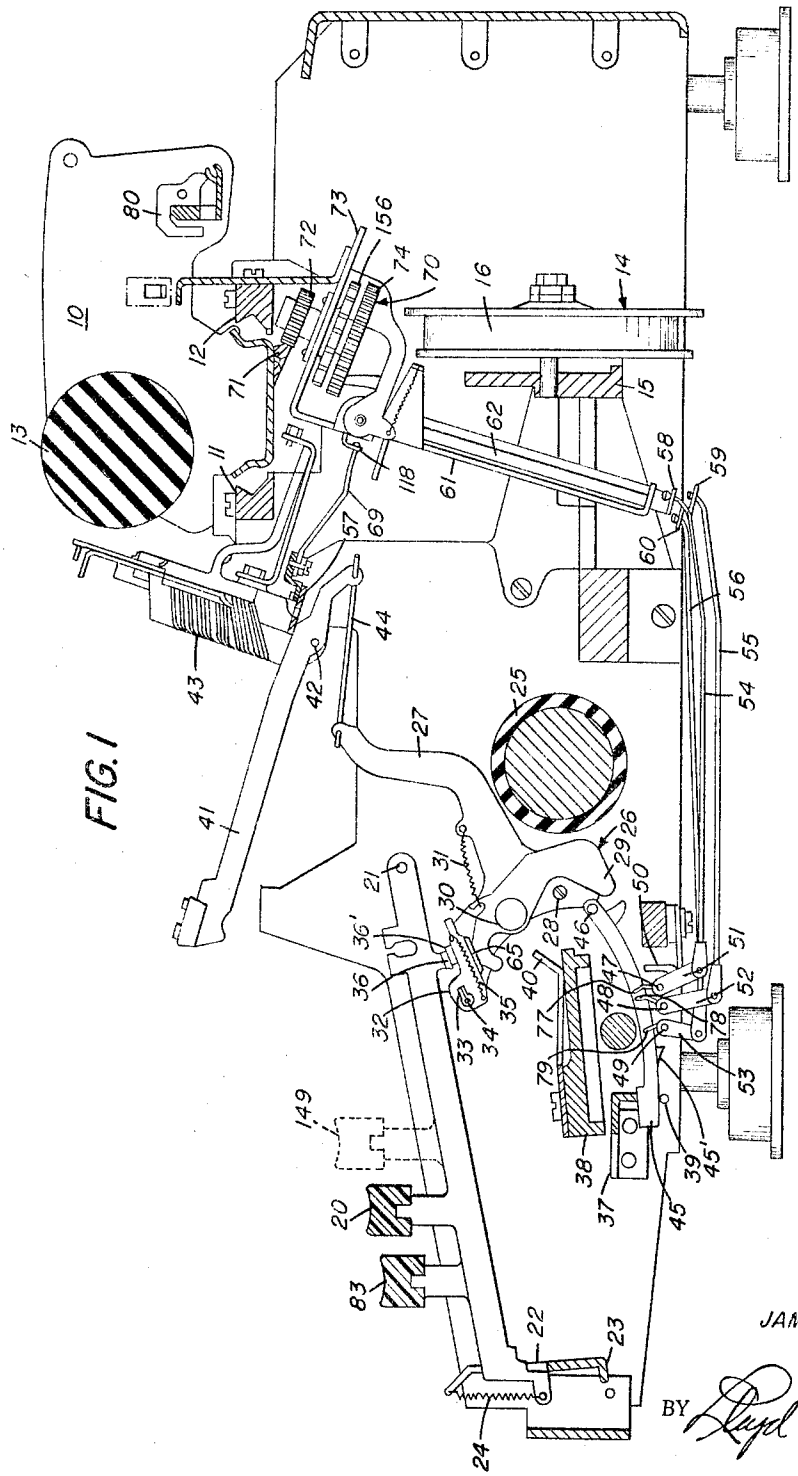


FIG. 1

JAMES F. SMATHERS
INVENTOR.

BY Floyd F. Seebach

AGENT

Aug. 30, 1966 J. F. SMATHERS 3,269,511

TYPEWRITER CARRIAGE POSITIONING MECHANISM

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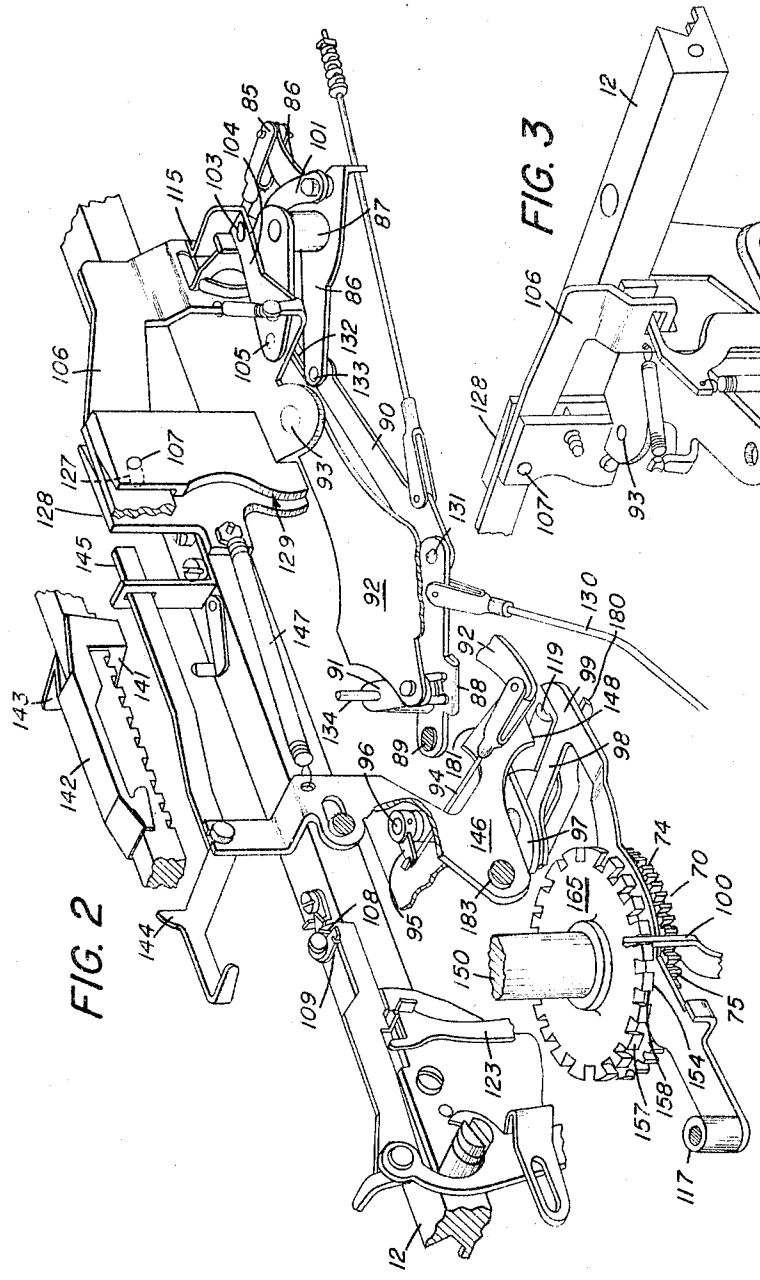


FIG. 2

FIG. 3

JAMES F. SMATHERS
INVENTOR.

BY Lloyd F. Steinbach

AGENT

Aug. 30, 1966 J. F. SMATHERS 3,269,511

TYPEWRITER CARRIAGE POSITIONING MECHANISM

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FIG. 4

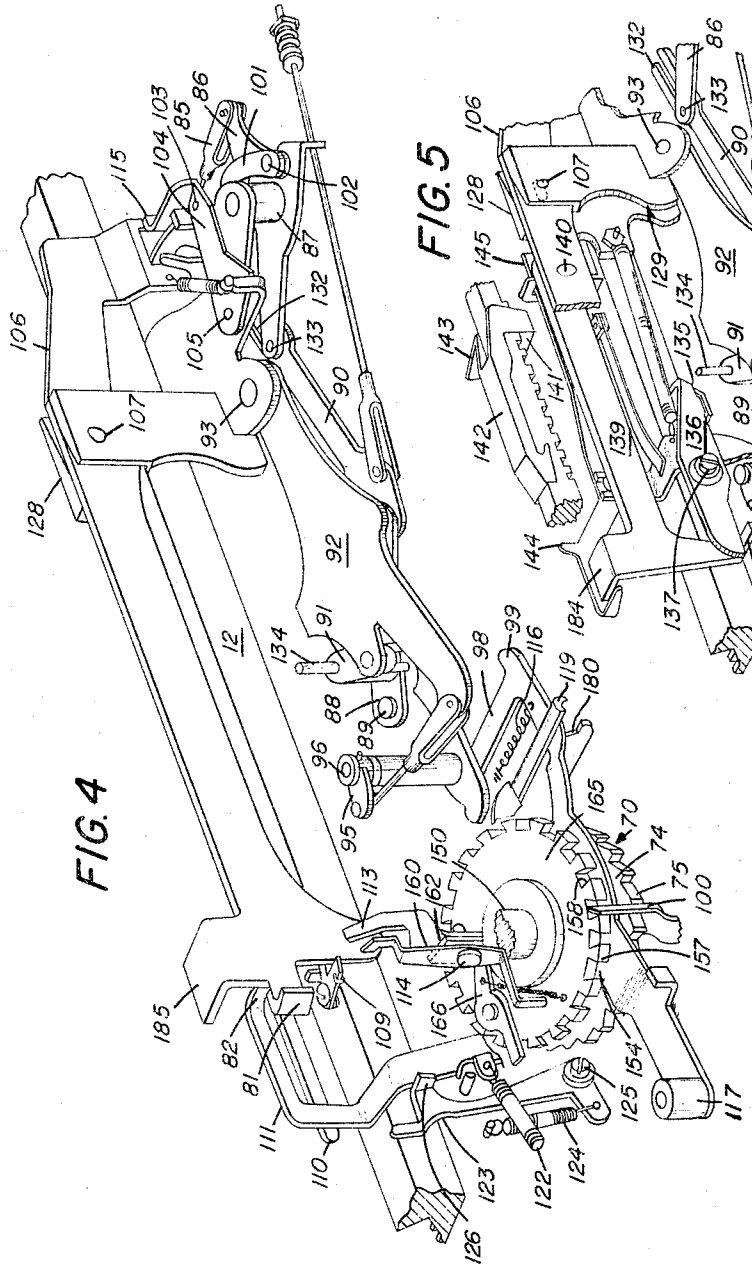


FIG. 5

JAMES F. SMATHERS
INVENTOR.

BY Floyd F. Seibach

AGENT

Aug. 30, 1966 J. F. SMATHERS 3,269,511

TYPEWRITER CARRIAGE POSITIONING MECHANISM

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FIG. 7

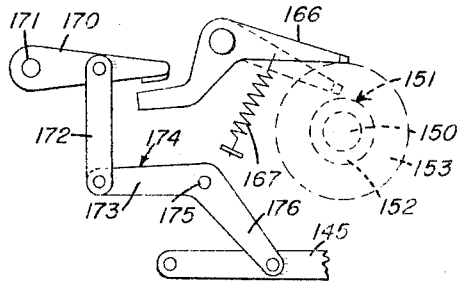


FIG. 8

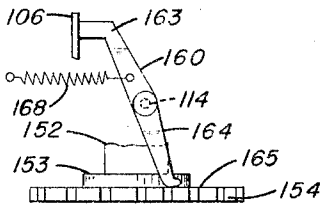


FIG. 9

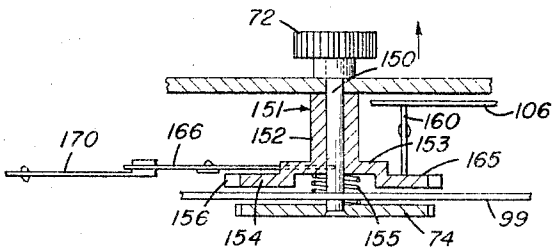


FIG. 10

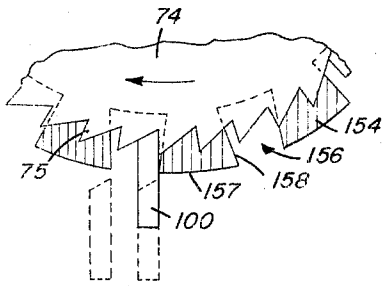
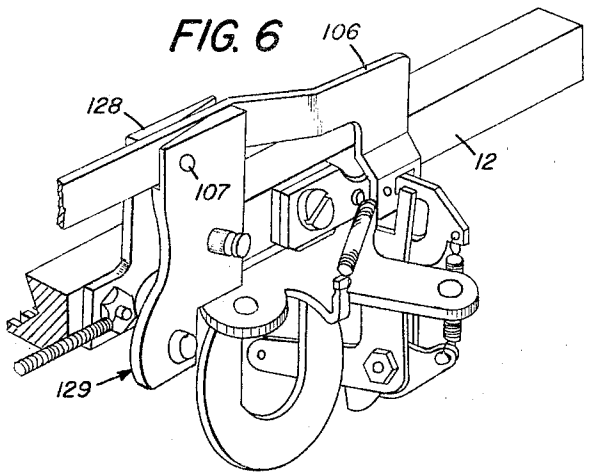


FIG. 6



JAMES F. SMATHERS
INVENTOR.

BY Floyd F. Gerlach

AGENT

United States Patent Office 3,269,511 Patented August 30, 1966

3,269,511

TYPEWRITER CARRIAGE POSITIONING MECHANISM

James F. Smathers, P.O. Box 1060, Poughkeepsie, N.Y.

Filed Aug. 12, 1963, Ser. No. 301,477
3 Claims. (Cl. 197—94)

The present invention relates to a carriage positioning mechanism for typewriters, and more particularly to a mechanism associated with the tabulating mechanism for establishing preselected carriage positions whereby the letter-space escapement mechanism is disabled with any carriage movement initiated by actuation of the tabulation key, or with carriage movement in a return direction.

In many typewriters, any movement of the carriage in a letter-space direction other than that permitted by actuation of a character key is controlled by a fixed stop and tabulating stops carried by the carriage, the fixed stop being positioned on the frame so as to locate the carriage in proper relation to the type position and the tabulating stops being moved to a control position with movement of the carriage to a position relative to the type position and actuation of a tabulation set key. With actuation of the tabulation key, the escapement mechanism for controlling the letter-space movement of the carriage is released, thereby freeing the carriage for movement under the influence of the carriage drive spring motor. As the distance through which the carriage is free to move until the fixed stop engages the first tabulating stop in its path increases, the momentum of the carriage also increases with the result that the tabulating stop engages the fixed stop with a great force. This force results in rebound of the carriage and the continual possibility of improper re-engagement of the escapement mechanism so that the carriage ultimately comes to rest but not in the desired relation to the type position as established by the position of the tabulating stop. Such erratic and unreliable location of the carriage has been further enhanced by the use of power operated mechanisms for effecting faster movement of the carriage in both a letter-space and carriage return direction and by the use of escapement mechanisms utilizing fine pitch ratchets in proportional letter spacing mechanisms.

Many attempts have been made to overcome this rebound effect of the carriage, upon arresting of its movement in either direction, so as to accurately position it relative to the type position, but none has satisfactorily solved the immediate problem. In the present invention, a simple mechanism, associated with the escapement mechanism and operable in conjunction therewith only when the tabulating key or the carriage return key has been actuated, solves the above-presented problem. This is accomplished by a plate having spaced, peripheral notches that are aligned with predetermined teeth on the escape ratchet so as to permit engagement of the escape pawl with the ratchet only after the carriage has come to a fully rest position. The plate is rotatable with the escapement ratchet and slidably mounted on the same shaft. Normally, the plate is biased away from the ratchet so as not to interfere with the operation of the pawl for proportional letter spacing and movement of the carriage in the letter-space direction. However, when the tabulating key or the carriage return key is actuated for fully releasing the carriage

from the escapement mechanism, the plate is moved axially toward the ratchet and retained in this position until the carriage comes to a complete stop, the escapement pawl and ratchet then being re-engaged. However, the control mechanism is not disabled with respect to the escapement mechanism until a character key is subsequently actuated. The land between the notches on the plate serves to hold an arm on the escapement pawl so the pawl cannot engage the ratchet until the tabulating stop or margin stop engages the fixed stop and rebounds. On movement of the carriage into a final rest position with the stops in engagement, the notch permits the arm to drop drown so the pawl engages the ratchet. Then with actuation of the first character key, the plate is released and moves axially beyond the end of the pawl arm to permit unrestricted movement thereof in conjunction with the escapement mechanism.

The primary object of the invention is to provide an arrangement for accurately positioning the carriage of a typewriter when its movement in a letter-space or carriage return direction is unrestricted by the escapement mechanism.

Another object of the invention is to provide a mechanism that operates in conjunction with the actuation of the tabulating key or the carriage return key of a typewriter to accurately position the carriage with respect to the typing position upon unrestricted movement thereof in a letter-space or carriage return direction.

Still another object of the invention is to provide a mechanism that is actuated with the escapement mechanism of a typewriter to prevent re-engagement of the escapement mechanism during rebound of the carriage as it is brought to a stop at the end of its unrestricted travel in a letter-space or carriage return direction.

A further object of the invention is to provide a mechanism for accurately controlling re-engagement of the escapement mechanism after release and any unrestricted travel of the typewriter carriage in a letter-space or carriage return direction.

And yet another object of the invention is to provide a simple and effective mechanism for ensuring accurate positioning of the carriage of a typewriter after any unrestricted travel thereof in a letter-space or carriage return direction.

These as well as other objects and advantages will be readily apparent to those skilled in the art when the description that follows is read in conjunction with the accompanying drawings. Reference is now made to the accompanying drawings wherein like reference numerals designate like parts and wherein:

FIG. 1 is a longitudinal sectional view taken through a typewriter embodying the invention;

FIG. 2 is a partial perspective view of the typewriter tabulating mechanism showing the control mechanism incorporated therein;

FIG. 3 is a partial perspective view of the end of the typewriter back rail;

FIG. 4 is a perspective view of the tabulating control mechanism;

FIG. 5 is a partial perspective view of the margin control mechanism;

FIG. 6 is a partial perspective view of the end of the typewriter back rail taken at a different angle from that shown in FIG. 3;

FIG. 7 is a diagrammatic plan view showing the holding member associated with the control mechanism;

FIG. 8 is a diagrammatic side view showing the relation of the control mechanism actuating member to the tabulating mechanism;

FIG. 9 is a vertical section through the control mechanism showing the relation of the control mechanism to the escapement pawl and the driving member therefor; and

FIG. 10 is an enlarged detail view showing the relation of the notches on the control plate to the teeth on the escapement ratchet.

The invention for controlling the unrestricted movement of a typewriter carriage is disclosed herein in conjunction with a typewriter as shown in my U.S. Patent 2,904,159 to which reference will frequently be made. The escapement mechanism per se can be one such as shown in the above-mentioned patent or one similar to that disclosed in my U.S. Patent 2,848,091 or in my presently pending patent application Serial No. 155,382, filed November 28, 1961, now U.S. Patent No. 3,096,865. It is to be understood that the invention about to be described is also readily applicable to other escapement mechanisms which are currently being used in typewriters which are now commercially available.

With reference to FIG. 1, a carriage **10**, which is a conventional typewrite carriage, is mounted for travel in a horizontal direction by means of a front rail **11** and a rear rail **12** and carries a conventional platen roll **13**. A spring motor **14** is rotatably mounted on a bracket **15** and by means of a metallic tape **16**, which has one end fixed to carriage **10**, moves said carriage in a letter-space direction in a manner well known in the art.

The character type keys **20**, only one of which is shown, are pivotally mounted at one end at **21** and guided in the slots **22** in a comb **23** which extends between the side frames. Springs **24**, one for each of keys **20**, maintain the keys in their normal position.

A conventional power-driven roller **25**, which is driven in a well-known manner by an electric motor not shown, is provided to drive a plurality of spring-loaded cams, generally designated by the numeral **26**, one of said cams being associated with each type key **20**, as is well known in the art and disclosed in my U.S. Patent 1,600,252. A plurality of cam levers **27**, corresponding in number to said type keys, are pivotally mounted on a rod **28** with each cam lever **27** having a cam **26** pivotally mounted thereon at **30** with a spring **31** maintaining each respective cam lever and cam in proper position. A selecting pawl **32** is pivotally mounted on each of cam levers **27** by means of a rivet **34** which extends through an elongated slot **33** in the pawl **32**. Each of the pawls **32** is provided with a lug **36'** that is maintained in abutting relation with a lug **36** on a respective key **20** by means of a spring **35** having one end fixed to pawl **32** and the other end fixed to its respective cam lever **27**. Each of the pawls is also urged toward a key **20** by a spring **31** due to engagement of each of cams **26** with a respective lug **65** on each of said pawls, thereby also serving to maintain lugs **36** and **36'** in an abutting relation.

A selector comb **37** is arranged beneath a bracket **38** and with respect to a rod **39**, cam stops **40** being adjustably mounted on the bracket **38**. Type bars **41** are pivotally mounted at **42** in a pivotable comb **43** and are connected by links **44** to their corresponding cam levers **27**. A rod **39** beneath comb **37** engages the underside of selectors **45** which are pivotally mounted at one end at **46** to cam levers **27** and slidably engage the slots in comb **37**. Templet rods **47**, **48** and **49** are mounted in a bracket **50** and carry rocker arms **51**, **52** and **53** to which clevis rods **54**, **55** and **56** are connected, respectively. These templet rods extend transversely of the typewriter and are disposed in intersecting planes with selectors **45** which engage a respective one of the projections **77**, **78**, **79** in the stepped upper edge of said templet rods. It should be noted at this point that selectors **45** are provided for keys **20** which require a spacing other than normal, in other words, more or less than three increments of space.

In operation, an operator will strike a key **20** causing it to pivot about **21** and thereby tension spring **24**. At the same time, the key is guided by slot **22** in comb **23** during its movement. Lugs **36** and **36'** cause pawl **32** to rotate the corresponding cam **26** in a counterclockwise direction, thereby urging cam portion **29** against the continuously rotating drive roll **25** whereby cam lever **27** is actuated and through link **44** causes type bar **41** to pivot on rod **42** and strike platen **13** to print the corresponding character. The pivoting movement of type bar **41** causes said bar to strike universal bar **57** which then shifts toward the rear of the typewriter. Cam lever **27**, simultaneously with the actuation of type bar **41**, draws selector **45** toward the rear of the typewriter and by means of lug **45'** the latter engages a respective projection **77**, **78**, **79** in a corresponding templet rod **47**, **48**, **49** to rotate the latter in a clockwise direction. With this action the corresponding clevis rods **54**, **55**, **56** is moved toward the front of the typewriter. A complete disclosure of the structure and function of selector **45** and its related elements can be found in my U.S. Patent 2,904,159.

Clevis rods **54**, **55** and **56** are connected to extensions **58**, **59** and **60** on rods mounted in a bracket **61**, only one of said rods, namely rod **62**, being shown in FIG. 1. Similar extensions, not shown, are fixed to the other ends of said rods which, in turn, are connected by links to plates for oscillating members which are associated with the escapement mechanism and fully described in my U.S. Patent 2,848,091. Also, universal bar **57** is connected by a link **69** to lip **118**, see FIG. 1, whereby an escapement mechanism **70** is actuated in a manner also described in the aforementioned Patent 2,848,091.

The escapement mechanism **70** is driven by means of the carriage **10**. This is accomplished by means of a rack **71** which is fixed to the carriage, as shown in FIG. 1, and which meshes with a pinion **72** on the upper side of a plate **73**. Pinion **72** is rotatably mounted with a ratchet **74**, the teeth of which determine the increment of movement of carriage **10**, as described in my above-noted patents.

For tabulating, one or more of tabulating stops **80** is actuated to a position in the path of lug **81** and contact end **82**, in a manner as disclosed in U.S. Patents 2,157,053 and 2,854,123, the latter patent disclosing a form of tabulating stop that is substantially the same as that shown in FIG. 1. A tabulator key **83**, which is arranged at one side of the keyboard in a well-known manner, is depressed causing a cam **26** to be actuated. Clevis rod **85** is secured on one end to the cam and on the other end to a control lever **86**, thereby pivoting control lever **86** on a spacer **87**, see FIGS. 2 and 4. Control lever **86** pivots a blade lever **88** around a stud **89** through an intermediate link **90**, see FIG. 2. Blade lever **88** through intermediate lever **91** pivots a flat lever **92** about the pivot at **93** which through a clevis rod **94** pivots a one arm lever **95** on shaft **96** and thereby swings a two arm lever **97** which abuts leg **98** of feed pawl disengaging lever **99** whereby tooth engaging finger **100** is raised out of engagement with escapement wheel teeth **75** as feed pawl disengaging lever **99** pivots around a stud **117**.

Simultaneously with the action just described, the pivoting of control lever **86** causes a link **101** through pivot **102** to move toward the rear of the machine and through the spacer connected at **103** to a dog leg lever **104**, the latter moves around pivot **105** so that end **115** on lever **104** pushes tabulating bar **106** to cause it to pivot sideways on stud **107** whereby lug **81** is moved toward the rear of the machine (in a counterclockwise direction as viewed in FIG. 4) into the path of tabulator stop **80**. Tabulator short latch **108** under the influence of its spring **109** pivots behind tabulator bar **106** to hold it in the tabulator stop position. A tongue **110** fixed to tabulator bar **106** pivots tabulator bell crank lever **111** around

its pivot (not shown) to place contact end **82** in the path of tabulating stop **80**. The sideways pivoting movement of tabulator bar **106** causes bar **106** to pivot tabulator latch **113** around pivotal point **114** whereby a stop thereon disengages a link to permit it to pivot, under the urging of a spring, away from the tabulator safety dog **119** to allow the tabulator safety dog to be influenced by its spring whereby a stop **180** thereof passes under the feed pawl disengaging lever **99** to latch it in position so as to maintain finger **100** disengaged from ratchet **74**, as disclosed and described in my Patent 2,904,159. The escapement wheel will then be free to allow the carriage **10** to travel under the influence of spring motor **14**.

When tabulator bell crank lever **111** pivots forwardly, a latch **123** under the influence of a spring **124** pivots on stud **125** to place a projection **126** behind the lever **111** to hold it in an outward position.

The carriage **10** under the influence of the spring motor **14** carries a set tabulator stop **80** to the right, as viewed in FIG. 2. The set tabulator stop **80** simultaneously strikes lug **81** and contact end **82**. The impact moves the tabulator bar **106** until stud **107** engages the left end of an elongated slot **127**. Continued movement of the tabulator bar thereafter tensions a leg **128** of bracket **129** thereby absorbing the impact of the carriage and momentarily limiting its movement. As the tabulator bar **106** approaches the limit of its movement, it moves into a position in which spring **109** can move tabulator short latch **108** behind tabulator bar **106**, so that at the limit of its movement, tabular bar **106** swings out of the path of the tabulator stop **80** due to the position now assumed by short latch **108**. While the tabulator bar is approaching its limit, contact end **82**, which also was engaged by stop **80**, pivots lever **111** around a stud (not shown) thereby causing a leg extension thereof to pivot the link associated with tabulator latch **113**, the stud, leg extension and link being more fully disclosed and described in my U.S. Patent 2,904,159, so as to force tabulator safety dog **119** downwardly, thereby freeing feed pawl disengaging lever **99** which pivots on stud **117** due to spring **116** to allow tooth engaging finger **100** to drop into engagement with a tooth **75** under the influence of the spring **116**. The carriage which was momentarily stopped at the limit of motion of tabulator bar **106**, now resumes its travel unimpeded by lug **81**, over a very short distance which, when translated into movement of the escapement, is a distance less than the pitch of the teeth on the escapement wheel. Movement of the carriage through this short distance pivots lever **111** further, whereby it slips off latch projection **126** and under the influence of a spring **122** resumes its normal position as shown in FIG. 4. This time the carriage movement is actually arrested by engagement of finger **100** in a tooth **75** of the escapement wheel. As is apparent from the above description, the impact of the carriage upon engaging lug **81** and end **82** should be absorbed by yieldable leg or member **128** which, after absorbing the impact, is ineffective to cause carriage rebound. However, it has been found that yieldable member **128** does not negate the rebound momentum of the carriage after striking the lug **81** to completely eliminate rebound and that finger **100** will slide past one or more teeth of the escapement wheel so as to improperly position the carriage relative to the typing position.

With reference to FIGS. 7–10, the shaft **150**, to which the pinion **72** and the ratchet **74** are connected, carries a slidable member **151** which comprises a sleeve portion **152**, a shoulder **153** and a control portion **154**. The member **151** is urged toward the pinion **72** by an expansion spring **155** and is normally retained in this position. The periphery of the control portion **154** is provided with spaced teeth **156** which are equiangularly spaced about the periphery of control portion **154**. The teeth **156** are formed by land portions **157** and recessed spaces **158**. As shown in FIG. 10, the peripheral length of each of the land portions **157** is equivalent to substantially twice the pitch of two successive teeth **75** of the ratchet **74**. On the other hand, each space **158** is of a width at the peripheral extremity that is equivalent to substantially the pitch of a single tooth on the ratchet **74**. It should be noted, particularly with respect to FIG. 10, that the sides of the spaces **158** diverge from the periphery toward the shaft **150**. In order that the lands **157** will retain the finger **100** positively disengaged from the ratchet **74** as described hereinafter, the diameter of the control portion **154** is slightly larger than the overall diameter of the ratchet **74**.

A link **160** is pivotally mounted at **114** on the opposite side of an ear **162** on which the latch **113** is also mounted. Link **160** has one end **163** abutting the tabulating bar **106** and the other end **164** in engagement with the rear surface **165** of the control portion **154**. From the above description relating to the operation of the tabulating bar **106** when the key **83** is actuated for positioning the lug **81** in the path of a tab stop **80**, the link **160** is moved in a clockwise direction whereby an end **164** causes the member **151** to be moved axially in a direction toward the ratchet **74**. As this occurs, a bell crank lever **166**, which is normally held against the shoulder **153** under the action of a spring **167**, is positioned over the shoulder **153**, as shown in dotted lines in FIG. 7, to retain the member **151** in close proximity to the ratchet **74**. Since member **151** is keyed or otherwise fixed to shaft **150**, member **151** and ratchet **74** will rotate as a unit. As described above, ratchet **74** is released for movement by means of spring motor **14** and rack **71** which meshes with pinion **72**, when finger **100** is disengaged from the teeth of ratchet **74**. When this occurs, as described above with respect to actuation of tabulating key **83**, the ratchet **74** and control member **151** rotate as a unit until the tabulating stop **80** engages the lug **81**.

As pointed out hereinbefore, the release of the carriage to establish the platen in relation to the typing position, in which case the platen may be moving at a relatively high speed, the impact force with which the tab stop **80** engages the lug **81** causes a rebound of the carriage before it actually comes to an arrested position. Due to the arrangement of the teeth **156** in relation to the teeth **75** on ratchet **74**, as shown in FIG. 10, the finger **100** is retained in a withdrawn position by the land portion **157** on rebound and does not align with a space **158** until the tab stop **80** has come to a definite rest and engaging position with respect to lug **81**. When this occurs, the finger **100** will be aligned with a space **158** and permitted to drop into engagement with the corresponding tooth of the ratchet **74**. Also, as tabulating bar **106** returns to its normal position, spring **168** causes link **160** to follow so that end **164** will permit member **151** to be moved axially by spring **155**. However, since lever **166** is still in engagement with surface **165** due to spring **167**, member **151** cannot move axially to its normal position.

As described in my above-mentioned U.S. Patent 2,904,159, when any one of the character keys **20** is actuated, the escapement mechanism **70** is also actuated to provide movement of the carriage in accordance with the number of increments of movement required for the character key that has been actuated. At the same time that the escapement mechanism **70** is released by actuation of one of keys **20** and movement of carriage return link **145** by universal bar **57**, a lever **170** that is pivotally mounted at **171** is moved by a link **172** in a clockwise direction, link **172** being pivotally connected to an arm **173** of a bell crank lever **174** which is pivotally mounted at **175** and has its other arm **176** pivotally connected to link **145**, as shown in FIG. 7. This movement of levers **170** and **166** with actuation of a key **20** causes the release of member **151**, in that lever **166** is rotated away from shoulder **153** so as to permit spring **155** to move member **151** in an axial direction away from ratchet **74** and to a position in which the control portion **154** cannot be engaged by finger **100**, thereby permitting the escapement

mechanism **70** to again be controlled by the successive actuation of each character key.

When the carriage **10** is to be returned under the influence of power, that is, by means of an electric motor not shown, a carriage return key **149** is depressed, thereby actuating one of the cams **26** which simultaneously performs two functions. One, the cam causes a clutch, not shown, to couple the carriage **10** to the electric motor. Two, by means of a clevis rod **130**, the cam **26** pivots blade lever **88** around stud **89** which through a pivotal connection **131** draws the intermediate link **90** and its fork end **132** away from a pin **133** on the control lever **86** which remains inoperative. Blade lever **88** pivots a stud **134** under a projection **135** thereby pivoting safety bumper lever **136** on stud **137** in a counterclockwise direction against leg **138** to pivot projection **184** out of the path of travel of base **141** on margin stop **142**.

By means of blade lever **88** and intermediate lever **91**, flat lever **92** is moved, and through clevis rod **94**, pivots lever **95** which, in turn, pivots lever **97** that abuts leg **98**, whereby feed pawl disengaging lever **99** lifts tooth engaging finger **100** out of engagement with the teeth **75**. The carriage **10** is now free to travel under the influence of the electric motor, since it is coupled thereto by the clutch previously mentioned, but not shown.

The carriage travels in a return direction, that is, to the left as seen in FIGS. 2, 4 and 5, until stop guide **143** strikes projection **144** and pulls carriage return link **145** sideways, thereby pivoting carriage return link **145** around stud **183** against the tension of spring **147**. Carriage return safety dog abutment **148** is raised away from carriage return safety dog **119** which, under the influence of a spring, pivots on a stud, both of which are not shown but which are disclosed and described in my U.S. Patent 2,904,159, to move the stop **180**, see FIG. 4, under feed pawl disengaging lever **99** into a position to hold tooth engaging finger **100** out of engagement with teeth **75**. By means of surface **181**, carriage return link **145** engages and pivots blade lever **88** on stud **89** and by means of a clevis rod and bell crank lever shown in my above patent, the clutch is disengaged to terminate the power return movement of the carriage. The movement of blade lever **88** by surface **181** removes stud **134** from beneath projection **135** so that safety bumper lever **136** is free to allow a spring to pivot safety bumper link **139** on pin **140** to place projection **184** in a position between base **141** and projection **185**. The pivoting of blade lever **88** by surface **181** also pivots (in a return direction) flat lever **92** which by means of clevis rod **94** pivots one arm lever **95** and two arm lever **97** to remove the latter from engagement with leg extension **98**.

As the events described above are occurring, base **141** strikes projection **185**, see FIGS. 2, 4 and 5, and causes tabulating bar **106** to pivot in a counterclockwise direction due to the offset relation of base **141** with respect to projection **185** and the location of pivot stud **107**, thereby rocking latch **113** and link **160** about the pivot **114**. The movement of link **160** causes end **164** thereof to move member **151** in an axial direction toward ratchet **74** so that member **151** and ratchet **74** are movable as a unit. Although the lever **99** is released upon engagement of base **141** with projection **144**, the finger **100** is held out of engagement with teeth **75** by the land portion **157** on rebound and does not align with a space **158** until base **141** has come to a definite rest and engaging position with respect to projection **144**. When this occurs, the finger **100** is aligned with a space **158** and permitted to drop into engagement with the corresponding tooth of the ratchet **74**. As described above, when any one of keys **20** is actuated, the escapement mechanism **70** is also actuated and levers **170** and **166** cause release of member **151** so that the escapement mechanism is again controlled by the successive actuation of each character key.

The control mechanism just described provides for an instant control of the tabulating stop mechanism or the carriage return mechanism in order to accurately position the platen with respect to the typing position. It will be readily apparent to those skilled in the art that the relationship of the spaces **158** of the member **151** to the teeth **75** of the ratchet **74** is of utmost importance in order to establish the proper relationship of the platen and carriage to the type position. It will also be readily apparent to those skilled in the art that this control arrangement may be varied or modified in many ways to accomplish the same result. However, the invention is not to be limited to the disclosed embodiment, but is of a scope as defined by the appended claims.

I claim:

1. In a typewriter having a plurality of character keys, a tabulating key, a carriage return key and a carriage movable in a letter-space direction relative to a typing position and in a return direction to a margin position, said carriage including a plurality of tabulating stops arranged thereon and movable selectively to a stop position for arresting uninterrupted travel of said carriage in said letter-space direction and an adjustable margin stop for arresting movement of said carriage in said return direction, drive means adapted to be coupled to said carriage for moving the latter in said letter-space direction, power means adapted to be coupled to said carriage for moving the latter in said return direction, an escapement mechanism including a ratchet and pawl and actuated by movement of one of said character keys for coupling said drive means to said carriage and for controlling the movement of said carriage in said letter-space direction in accordance with the character key that is actuated, a tabulating mechanism including a stop member and actuated by movement of said tabulating key for enabling said escapement mechanism to couple said drive means to said carriage for uninterrupted movement thereof in said letter-space direction, and a carriage return mechanism including a return stop member and actuated by movement of said carriage return key for coupling said power means to said carriage for movement thereof in said return direction, the combination comprising:

a disc provided with equiangularly spaced, peripheral notches and slidably mounted for coaxial movement into cooperating relationship with said ratchet in response to actuation of said tabulating mechanism and of said carriage return mechanism for controlling the return of said escapement mechanism to an operative condition to establish the position of said carriage relative to said typing position, the lands between successive notches serving to hold said pawl out of engagement with said ratchet until movement of said carriage in either of said letter-space direction or said return direction has been arrested;

means movable in response to engagement of said stop member and one of said tabulating stops in said stop position with uninterrupted movement of said carriage in said letter-space direction and of said return stop member and said margin stop with movement of said carriage in a return direction for holding said disc in cooperating relationship with said ratchet; and

means responsive to actuation of the first character key after movement of said carriage has been arrested for releasing said holding means to re-establish control of the movement of said carriage by said escapement mechanism.

2. A typewriter in accordance with claim **1** wherein the notches in said disc are of a width greater than the pitch of the teeth of said ratchet and of a depth greater than said teeth whereby said pawl can engage only the teeth of said ratchet aligned with said notches.

3. A typewriter in accordance with claim **1** wherein the pitch of the teeth of said ratchet is equivalent to the

smallest increment of movement of said ratchet and the pitch of the notches in said disc is equivalent to the largest increment of movement of said ratchet.

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ROBERT E. PULFREY, *Primary Examiner.*

DAVID KLEIN, *Examiner.*

E. T. WRIGHT, *Assistant Examiner.*