April 6, 1943. R. VON REPPERT 2,315,992

TYPEWRITING MACHINE

Filed Dec. 6, 1940 4 Sheets-Sheet 1

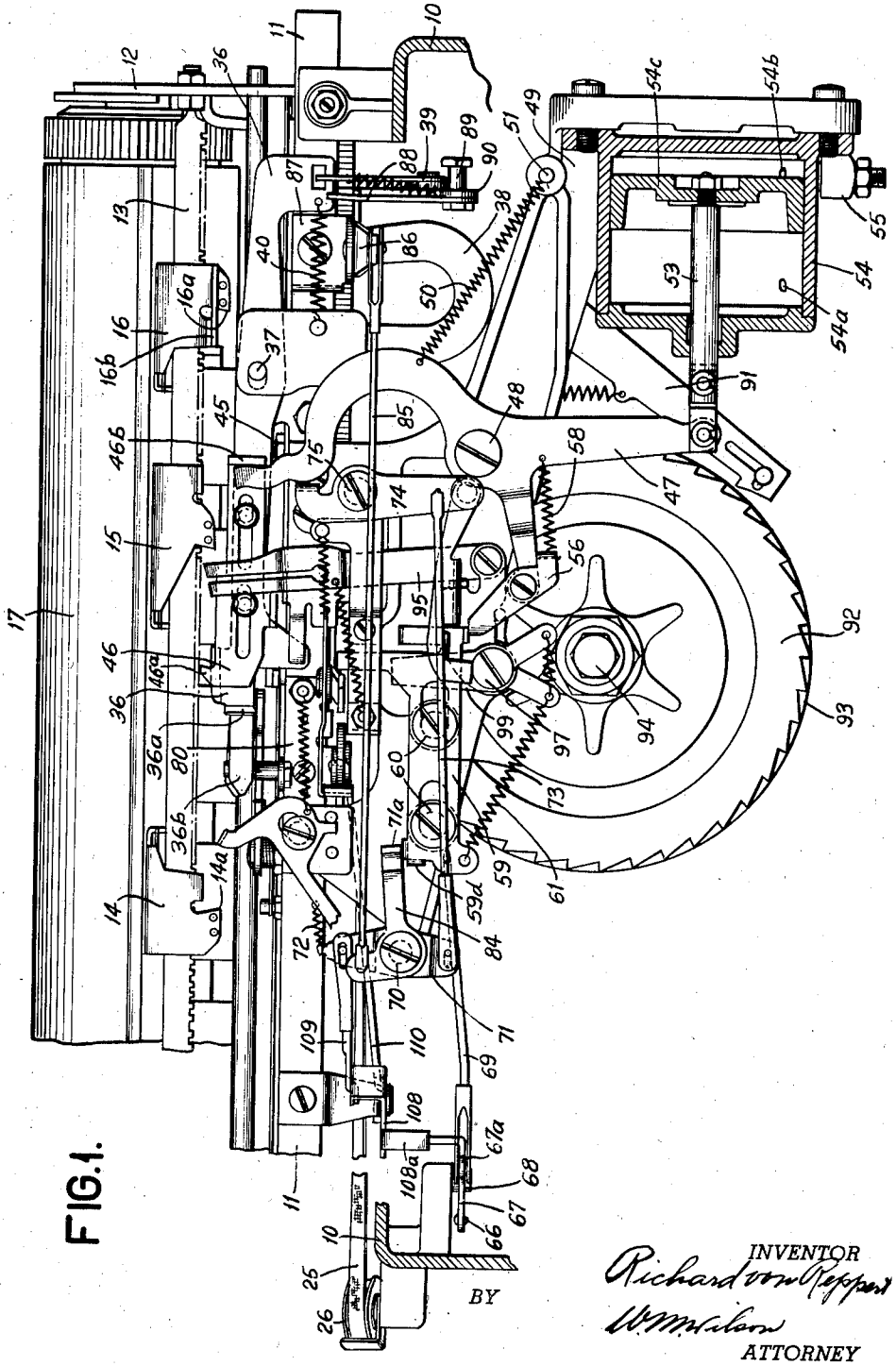


FIG. 1.

INVENTOR
Richard von Reppert
BY
ATTORNEY

April 6, 1943. R. VON REPPERT 2,315,992

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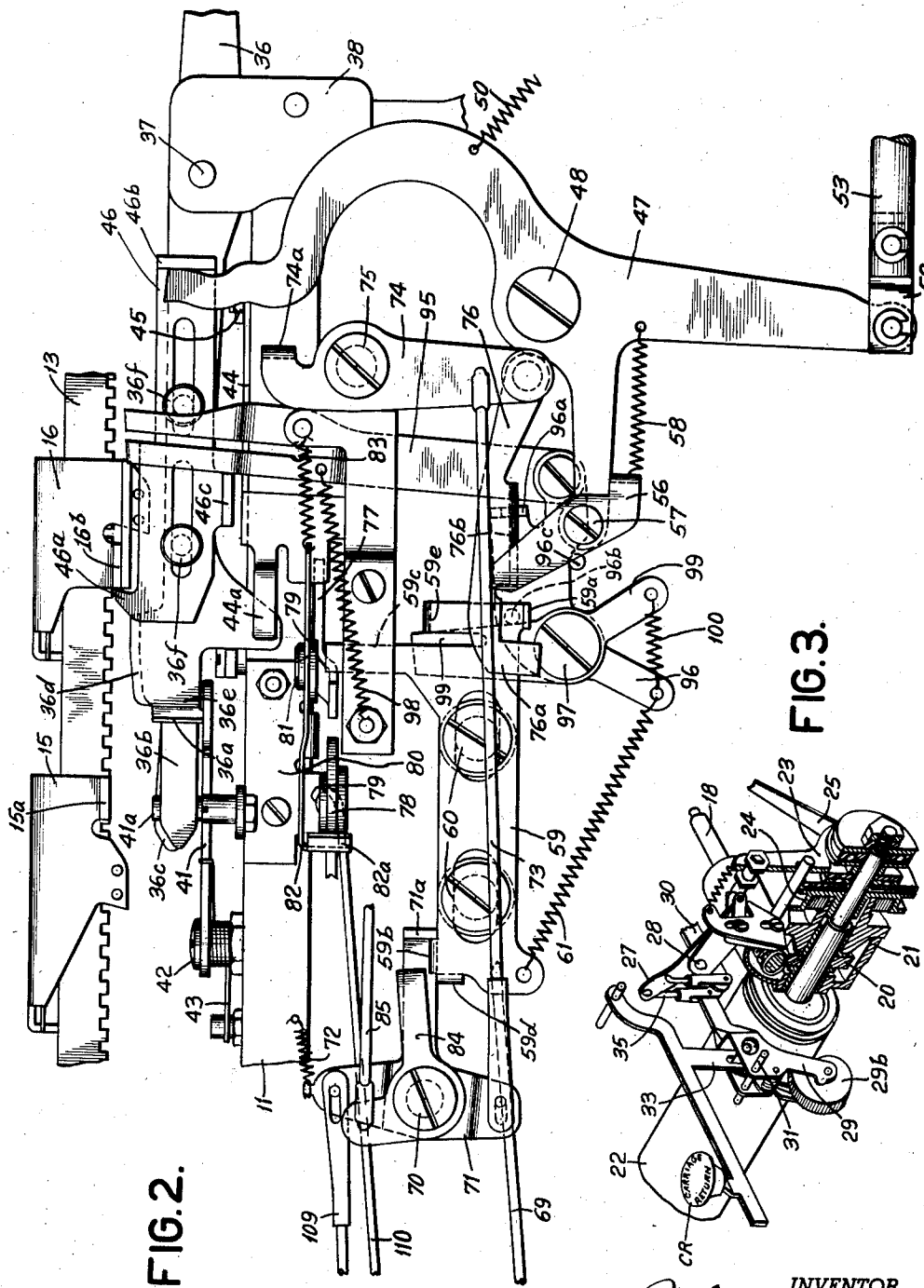


FIG. 2.

FIG. 3.

INVENTOR
Richard von Reppert
BY
W. M. Wilson
ATTORNEY

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TYPEWRITING MACHINE

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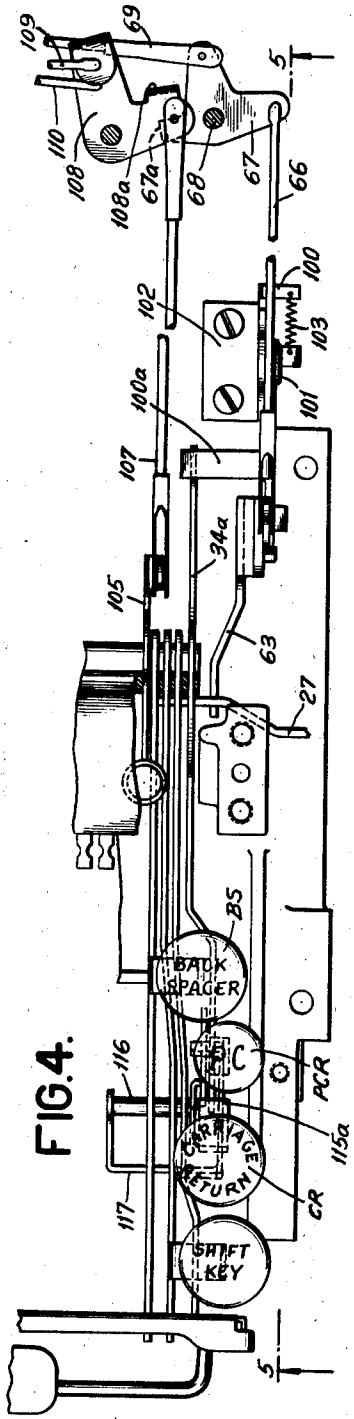


FIG.4.

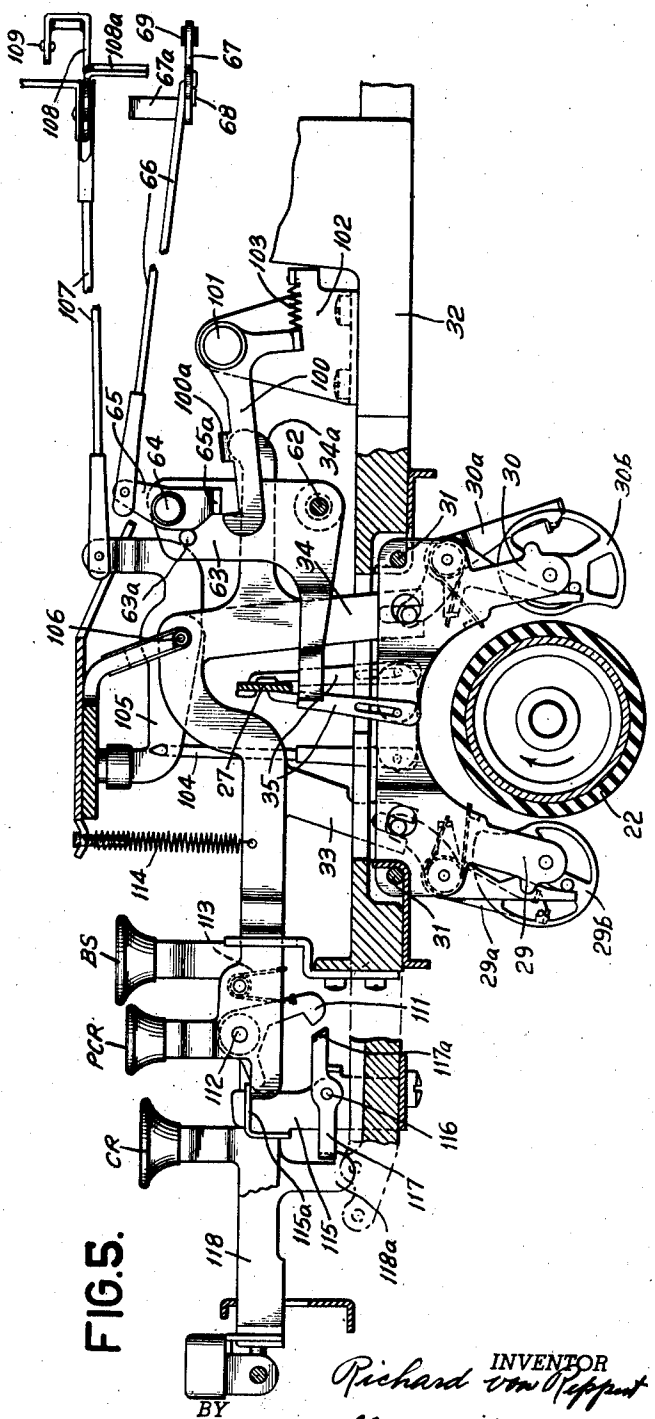


FIG.5.

INVENTOR
Richard von Reppert
BY
ATTORNEY

April 6, 1943. R. VON REPPERT 2,315,992

TYPEWRITING MACHINE

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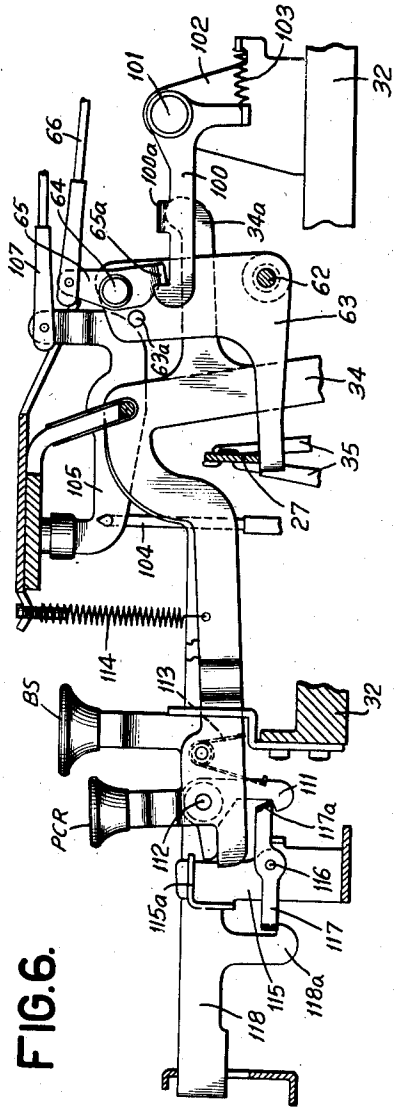


FIG.6.

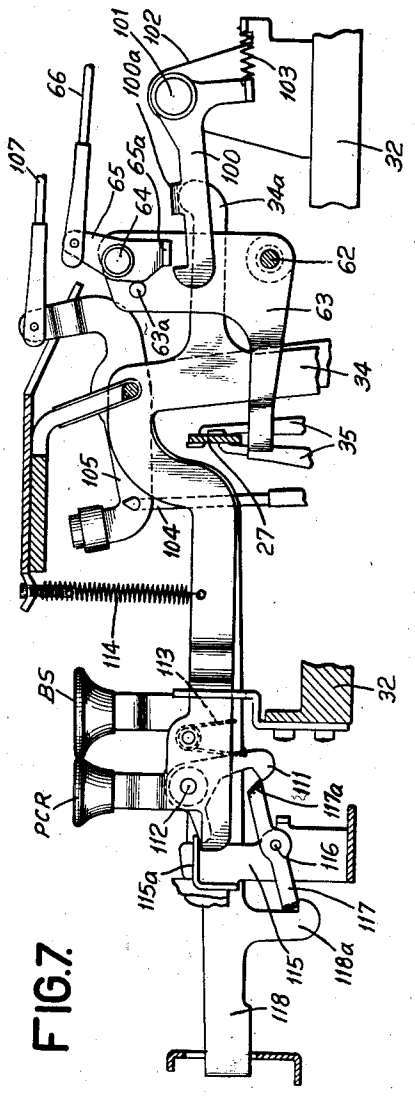


FIG.7.

BY

Richard von Reppert INVENTOR

W. M. Wilson ATTORNEY

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2,315,992

UNITED STATES PATENT OFFICE

2,315,992

TYPEWRITING MACHINE

Richard von Reppert, Rochester, N. Y., assignor to International Business Machines Corporation, New York, N. Y., a corporation of New York

Application December 6, 1940, Serial No. 368,829

31 Claims. (Cl. 197—66)

This invention relates to typewriting machines.

The broad object of the present invention is to provide an improved carriage return mechanism for typewriters, record card punches, and other machines having movable carriages.

An object is to provide a carriage return mechanism which is quieter in its operation.

An object is to provide a carriage return mechanism with means for absorbing the shock which is produced by the abrupt termination of the returning movement of the carriage by the usual limiting means, such as a marginal stop.

An object is to provide a carriage return mechanism which is capable of returning the carriage to an intermediate point determined by means, such as a supplemental marginal stop, located and adjusted a distance ahead of the main marginal stop.

An object is to provide a carriage return mechanism with shock absorbing means which is effective both with a full return and a partial return of the carriage.

An object is to provide a partial carriage return mechanism which is positive and reliable in its action.

Other objects of the invention will be pointed out in the following description and claims and illustrated in the accompanying drawings, which disclose, by way of example, the principle of the invention and the best mode, which has been contemplated, of applying that principle.

In the drawings:

Fig. 1 is a rear elevation of the carriage return mechanism, showing the parts directly behind the carriage in normal position.

Fig. 2 is a view similar to Fig. 1 but on a larger scale and shows certain of the parts in operated condition.

Fig. 3 is a detail view in perspective showing the carriage return clutch and the main carriage return key.

Fig. 4 is a plan view of the portion of the keyboard and associated mechanism comprising the full carriage return, the partial carriage return, the back space, and a shift key.

Fig. 5 is a vertical section on the line 5—5 in Fig. 4 and shows the mechanism associated with the keys in the normal condition.

Fig. 6 is a view somewhat similar to Fig. 5 with the partial carriage return key depressed.

Fig. 7 is similar to Fig. 6 but shows the partial carriage return key nearly fully restored to the normal position and the back space key depressed.

The invention as shown in the drawings is applied to the well known "International" electric writing machine which has also been called the "Electromatic." However, it will be understood that this has been done purely as a convenience in description as the invention may be applied to other forms of power operated typewriting machines or to manually operated typewriters with minor changes in the mechanism.

In Fig. 1 the reference numeral 10 designates a portion of the main frame or base of the typewriter on which is mounted the rear rail 11. In conjunction with the front rail, not shown, the rear rail 11 supports a carriage which includes side plates like 12 and a marginal stop rack 13 on which is slidably mounted the right hand marginal stop 14, the intermediate stop 15, and the left hand marginal stop 16. The stops 14 and 16 determine the right and left hand margins of a sheet being typed upon and all of the stops are adjustably mounted in a well known way on rack 13. The marginal stop 14 is of conventional form but the stops 15 and 16 are modified somewhat to adapt them to the mechanism hereinafter described. The platen 17 is rotatably mounted in a well known way in the side plates 12.

Power for returning the carriage is supplied by a main motor, not shown, connected to a worm shaft 18 (Fig. 3) having a worm 19 meshing with a worm wheel 20 secured to a short shaft 21. This shaft 21 has detachably keyed to it a power roll 22 which is continually rotated in the direction of the arrow (Fig. 5) by the motor to furnish power for operating type bars and other mechanisms of the typewriter, including the carriage return mechanism. The carriage return clutch is generally designated 23 in Fig. 3 and when engaged causes a tape drum 24 to wind the carriage return tape 25. This tape passes over a pulley 26 (Fig. 1) attached to the base of the machine and is connected to the carriage through means, not shown, which includes a lever for operating the line space mechanism for the platen 17. Whenever the tape 25 is put under tension by the winding of the tape upon the tape drum 24, the line space mechanism is actuated and the carriage is thereafter returned by moving it to the left in Fig. 1 until its motion is arrested by one or the other of the marginal stops 15, 16.

The engagement of the clutch 23 is effected by a toggle including a lever 27 (Figs. 3 to 7) which is operatively connected to the clutch whereby the clutch is engaged whenever the lever 27 is rocked counterclockwise about its pivot 28 (Fig. 3) or drawn downwardly (Figs. 4 to 7). The toggle of which lever 27 is a part is so designed that when the lever 27 is rocked counter-

clockwise (Fig. 3) a certain extent, the toggle passes through a dead center position and becomes locked to hold the clutch 23 in the engaged position. The toggle also holds lever 27 in shifted position as in Fig. 6. The clutch cannot be released until a positive disengaging force is applied to the lever 27 in a direction contrary to the motion imparted to the lever to engage the clutch. This feature should be remembered as it is the means by which the clutch is held in engagement during a partial return operation until the partial return key has been released.

The mechanism so far described is well known in the art and for that reason will not be described in greater detail but reference may be had to Patent No. 1,753,450, which shows the construction of the clutch and parts connected with lever 27, and Patent No. 1,957,322, which shows the connections of the tape to the carriage and the line space mechanism.

In the present case, two carriage return keys are provided comprising the main carriage return key CR (Figs. 3, 4 and 5) and a partial carriage return key PCR (Figs. 4 to 7) which control single lobed cam units 29, 30 (Fig. 5). The cam units 29, 30 are pivotally mounted on rods 31 in the sub-frame 32 which rods and frame also support the cam units for operating the type bars and other mechanisms, the type basket, and other parts. The cam unit 29 is rendered operative upon a depression of the key CR through the medium of an extension 33 on the key CR which controls a release lever 29*a* on the cam unit 29. Similarly the key PCR controls the cam unit 30 through an extension 34 and release lever 30*a*. Whenever these keys are depressed, the associated cam unit 29 or 30, as the case may be, is rendered operative by the power roller 22 to rock the cam unit on the rod 31 clockwise in the case of cam unit 29, and counterclockwise in the case of cam unit 30.

The frames of the cam units 29, 30 are formed as bell cranks, one arm of which carries a cam 29*b* or 30*b*, while the other arms extend horizontally and are connected by slotted links 35 to the lever 27 whereby an actuation of either cam unit by the power roller 22 results in the links 35 drawing the arm of lever 27 downwardly in Fig. 5 or counterclockwise in Fig. 3. Thus the operation of either cam unit effects an engagement of the carriage return clutch 23 which causes the carriage to return until arrested by one or the other of the marginal stops 15, 16. The returning movement of the carriage is controlled by the marginal stops 15, 16 through mechanism shown in Figs. 1 and 2.

A machine of this type is usually equipped with power operated tabulating mechanism of the type disclosed in Patent No. 1,935,436 which includes a tabular lever 36 (Figs. 1 and 2) pivotally and slidably mounted to a limited extent at 37 on a bracket 38 secured to the rear rail 11. The lever 36 is mounted on the stud 37 loosely enough to permit the lever 36 to be rocked in a horizontal plane through the medium of an arm 39 actuated by a cam unit like 30 in Fig. 5 through connections not shown but which are described in Patent No. 1,935,436.

When the tabulating key is depressed, the right hand end of the lever 36 in Figs. 1 and 2 is moved toward the rear rail 11, causing the left hand end of the lever 11 to move in a direction away from the rail 11 to bring a lug 36*a* formed in the lever 36, into the plane of the usual tabular stops on the carriage. At the same time, the lever 36 is latched in its moved position and is held there until a tabulating stop engages the lug 36*a* and moves the lever 36 to the right (Fig. 1) a short distance against the tension of the restoring spring 40 which is anchored to the bracket 38 and to the right hand end of the lever 36. This movement is permitted by virtue of the fact that lever 36 is slotted horizontally at the point where the stud 37 passes therethrough. The left hand end of the lever 36 (Figs. 1 and 2), as best shown in the latter view, is provided with an extension 36*b* and a leaf-spring 36*c* bearing on opposite sides of a stud 41*a* carried by an arm 41.

The arm 41 is pivotally mounted on a stud 42 on top of the rear rail 11 and at its right hand end supports the left hand end of lever 36 by bearing against the lower edge of the lug 36*a*. A spring 43 coiled about the stud 42 operates by compression to hold the lever 41 upwardly against the head of the stud 42 as in Fig. 2, and at the same time by torsion exerts a restoring force upon the lever 36 through the pin 41*a* and the parts 36*b*, 36*c* which engage the pin. When the tabular lever is unlatched by a movement to the right thereof during a tabulating operation, spring 43 restores the tabular lever to the normal position. Normally, the tabular lever occupies the position shown in Figs. 1 and 2 with the lug 36*a* fully retracted so as to clear the tabular stops.

The lever 36 also has a bent-over lug 36*d* which extends horizontally into the path of downwardly projecting portions 14*a*, 16*a* (Fig. 1) of the marginal stops 14 and 16 to cooperate with the latter when the carriage is moved to its extreme limits of travel to prevent over-travel of the carriage. In the machine disclosed in Patent No. 1,935,436, the lug 36*d* and the projections 14*a*, 16*a* determine the right hand and left hand marginal positions of the carriage. Through the usual marginal release button, not shown, the arm 39 may be raised so as to rock the lever 36 in a counterclockwise direction (Fig. 1) to depress the left hand end of the lever 36 and remove the lug 36*d* from the path traveled by the portions 14*a*, 16*a* of the marginal stops to enable the carriage to be moved a further extent beyond the margins.

When the tabulating mechanism is operative, or when the carriage return is effective, it is desirable that the escapement pawls be released. This is effected by means of an arm 44 pivoted at 45 (Figs. 1 and 2) on the top of the rear rail 11. This lever swings in a horizontal plane and is provided with a lug 44*a* which engages an extension 36*e* on the lever 36 whereby the lever 44 is moved in the same direction as the lever 36 during a tabulating operation. Through a lug, not shown, formed in the lever 44 and extending partly around the rear rail 11, the usual escapement pawls, not shown, are released and allow the carriage to run free in the case of a tabulating operation and prevent the clicking noise which would otherwise result when the carriage is returned. The foregoing are usual features of this machine. The intermediate marginal stop 15 is designed to clear the lug 36*d* under all conditions.

A slide 46 (Figs. 1 and 2) is mounted on the tabular lever 36 for movement in a horizontal direction, parallel with the movement of the carriage, by means of studs 36*f* which project through slots in the slide 46 and are carried by the tabular lever 36. This slide 46 has a lug 46*a*

which extends upwardly into the plane of a projection 16b extending from the side of the marginal stop 16, whereby the movement of the carriage to the left in Fig. 2, which is the direction taken when returning the carriage, will result in the slide 46 being actuated by the carriage. The right hand end of the slide 46 has a lug 46b engaging the upper end of a three-arm dash-pot operating lever 47 pivoted at 48 on a frame 49 secured to the rear rail 11. The arm of the lever 47 which engages lug 46b is curved to avoid interference with certain parts not shown. The lever 47 is actuated in a clockwise direction by a spring 50 anchored to a pin 51 carried by the frame 49 whereby the upper arm of the dash-pot lever 47 constantly engages lug 46b.

One of the arms of the dash-pot lever 47 extends downwardly and is connected by a short link 52 to the piston rod 53 of a dash-pot 54, also secured to the frame 49. The dash-pot 54 is provided with an open port 54a and a closed port 54b provided with a valve 55 by means of which the discharge of air from the right-hand chamber (Fig. 1) of the dash-pot may be regulated. The piston 54c is provided with a suitable reed valve, not shown, which enables the piston to move to the left freely without compressing the air in the left hand chamber of the dash pot but which closes with movement of the piston to the right to compress the air in the right hand chamber. The port 54a is made large enough and the reed valve so designed that there is relatively little opposition offered to the movement of the piston to the left whereby it can be set to operative condition very quickly as will appear hereinafter.

The lever 47 is provided with a detent pawl 56 pivoted at 57 to the third arm of the lever 47 and actuated by a spring 58 connected to a bent-over lug on the pawl 56 which engages the edge of the third arm to limit counterclockwise movement of the pawl 56. Normally the pawl 56 engages a bent-over lug 59a formed in a slide 59 and holds the lever 47 in the position of Fig. 1 with the piston 54c at its limit of travel to the right. Under these conditions the spring 50 constantly tends to draw the slide 46 to the right and to draw the piston 54c to the left but is prevented from doing so by the engagement of the end of the pawl 56 with the underside of the lug 59a.

The slide 59 is mounted on the frame 49 by means of studs 60 which extend through slots in the slide 59 to enable the latter to move horizontally parallel with the rear rail 11. A spring 61 anchored to an ear formed in the slide 59 normally holds the latter in the position of Fig. 1 to prevent clockwise movement of the dash-pot operating lever 47. When drawn to the left, however, the lug 59a passes out of contact with the end of the pawl 56 and permits the spring 50 to rock the lever 47 in a clockwise direction to the position of Fig. 2 to render the dash pot effective. This also causes the slide 46 to move to the right to carry the lug 46a nearer to the lug 16b on the marginal stop 16 in whatever position the latter may be in consequence of the position of the carriage.

The slide 59 is given two different extents of movement to the left from the position of Fig. 1. The shorter of these two movements takes place when a full return of the carriage is initiated by pressing the key CR in Figs. 3, 4, and 5 and is produced by mechanism shown in Figs. 4 to 7. Pivoted at 62 is a bell crank 63 having an arm extending horizontally underneath the end of the lever 27 to which the links 35 are connected, whereby, whenever the lever 27 is drawn downwardly by cam units 29, 30, the bell crank 63 will be rocked counterclockwise in Fig. 5. Pivoted at 64, on the vertical arm of the bell crank 63, is a short lever 65 which engages a pin 63a on bell crank 63. The pin 63a prevents clockwise movement of the lever 65 from the position of Fig. 5.

The upper arm of the lever 65 is connected by a link 66 (Figs. 1, 4, 5, and 6) to a three-arm lever 67 pivoted at 68 to a relatively fixed part of the machine. One of the arms of the lever 67 is connected by a link 69 to the slide 59. When the full carriage return key CR is depressed, the actuation of lever 27 by the cam unit 29 causes the bell crank lever 63 to rock counterclockwise in Fig. 5 and draw the link 66 to the left. This rocks the three-arm lever 67 (Fig. 4) in a clockwise direction, thereby drawing link 69 and slide 59 to the left in Fig. 1. The movement thus imparted to the slide 59 is sufficient to move said slide to the position of Fig. 2 to release the lever 47 which operates the dash pot 54.

Pivoted at 70 (Figs. 1 and 2) is a three-arm detent lever 71 having an offset lug 71a normally resting upon a lug 59b formed in slide 59 as shown in Fig. 1. When the slide 59 is moved to the left as a result of depression of the carriage return key CR, a spring 72, anchored to one of the arms of the lever 71 and to a pin on the rail 11, rocks the lever 71 clockwise to latch the slide 59 in the position of Fig. 2. One of the arms of the lever 71 is connected by a link 73 to a lever 74 pivoted at 75 to the frame 49. The lever 74 has an offset lug 74a which projects into the plane of the curved arm of dash-pot lever 47. Normally the dash-pot lever 47 is latched with the curved upper arm which engages the lug 46b also in contact with the lug 75a. However, when the carriage return key is depressed and the slide 59 is latched as shown in Fig. 2, the lever 47 moves away from the lug 75a to the position of Fig. 2 carrying with it the slide 46.

Fig. 2 shows the condition of the parts after the carriage return key has been depressed and the carriage has moved to the left just far enough for the lug 16b on the marginal stop 16 to engage the lug 46a. With continued return movement of the carriage, that is, to the left in Fig. 2, the slide 46 is moved with the carriage and operates the dash pot 54 through the lever 47 against the tension of the spring 70. Ultimately the lever 47 engages the lug 74a and rocks the lever 74 a slight extent just sufficient to remove the lug 71a from latching relationship with the lug 59b, thereby leaving the spring 61 to draw the slide 59 to the right. The unlatching of the slide 59 takes place when the projection 16a is just about to strike the lug 36d which determines the final stopping point of the carriage and by this time the lever 47 will be moved far enough by the slide 46 to carry the end of pawl 56 below the lug 59a. However, even if the slide 59 is released too soon, the pawl 56 will wipe past the lug 59a and snap underneath said lug. It is for this reason mainly that the lever 47 is provided with pawl 56 rather than a rigid arm as it might be possible for the slide 59 to be released by accident before the lever 47 is in a suitable position to be relatched by the slide 59. For instance, if the arm on which pawl 56 is mounted directly cooperated with the lug

59a, it might be possible with premature release of the slide 59, for the lug 59a to pass underneath the arm on the lever 47 and block the latter from counterclockwise movement by the carriage which, of course, would be likely to result in breakage of some part, such as the arm 47, the lug 46b, or the lug 46a. In any event, a serious jamming or disarrangement of the parts would be likely to take place.

It is barely possible that the slide 59 might stick or fail to move all of the way to the right upon release of the detent lever 71, in consequence of gummy oil or breakage of the spring 61. It is also desirable that a positive release of the carriage return clutch be effected and means are provided to positively draw the slide 59 to the right so that dependence need not be placed solely upon the spring 61 to disengage the clutch or restore the slide 59 to latching relationship with the dash-pot lever 47. For this purpose there is pivoted to the lower end of the lever 74 the member 76 which extends horizontally to the left (Figs. 1 and 2) and is formed with a hook-shaped portion 76a which extends downwardly to the left of the lug 59a. Considering for the moment that the link 76 is guided for horizontal movement in a manner to be explained hereinafter, upon the return of the carriage and the operation of the lever 74, member 76 is drawn to the right and, by engagement with the lug 59a, pulls slide 59 to the right, if necessary. The member 76 is supported for both horizontal and vertical movement by parts connected with the partial carriage return stop for a purpose to be explained more clearly hereinafter.

The movement of the slide 59 to the right from the position of Fig. 2 to the position of Fig. 1 by the member 76 effects disengagement of the carriage return clutch. Upon the release of the detent lever 71 by the movement of the carriage, the link 69 is drawn to the right (Fig. 2), thereby rocking the lever 67 in a counterclockwise direction (Fig. 4) thereby drawing the link 66 to the right in Fig. 5. Owing to the engagement of the pin 63a with the lever 65, the bell crank 63 is forced to move in a clockwise direction (Fig. 5) causing the horizontal arm thereof to press upwardly the lever 27. This effects bending of the toggle including lever 27 which forms a part of the mechanism for holding the clutch 23 in engagement and permits the tension on the tape 25 to relax.

It is desirable that the usual escapement pawls be disengaged from the escapement rack during the return of the carriage in order to prevent the clicking noise which would otherwise result from the dragging of the pawls over the teeth of the rack. For this purpose, the slide 59, as most clearly shown in Fig. 2, is provided with an upstanding lug 59c which is engageable by one arm of a bell crank 77 on the underside of the rear rail 11. When the slide 59 is drawn to the left to release the dash-pot lever 47, the bell crank 77 is engaged by the lug 59c and rocked in a horizontal plane and one arm of the bell crank rocks the arm 44 to disengage the escapement pawls, the lever 44 being operated in the same direction as when the tabular lever 36 is operated.

Further means are provided to lock the back space mechanism against operation to prevent possible damage to parts. The back space mechanism may be the same as disclosed in Patent No. 1,873,553 and includes a pawl 78 pivoted at 79 on a bracket 80 secured to the rear rail 11. When the back space mechanism is operated, the pawl 78 moves to the left (Figs. 1 and 2) to reversely feed the carriage one letter space. Also pivoted at 81 on the bracket 80 is a lever 82, the right hand end of which is held by a spring 83 in engagement with the opposite side of the lever 44 to that engaged by the lever 77. The lever 82 has a downwardly extending lug 82a which is moved into position to prevent movement of the back space pawl 78 to the left whenever the lever 44 is operated either by the movement of the tabular lever 36 during a tabulating operation or by movement of bell crank 77 as described above during a carriage return operation.

It is also desirable that an interlock be provided between the tabulating mechanism and the carriage return mechanism to prevent operation of the tabulating mechanism when returning the carriage and vice versa, since the two movements are opposite and breakage of parts would be likely to result. For this purpose, there is provided a detent lever 84 (Figs. 1 and 2) pivoted on the stud 70 which serves as a pivot for the detent lever 71. The detent 84 is connected by a link 85 to a bell crank 86, (Fig. 1 only) pivoted on a bracket 87 secured to the rear rail 11. One arm of the bell crank 86 extends through an opening in one arm of a bell crank 88 which is slotted or forked at its upper end to loosely engage both sides of the lever 36. The bell crank 88 is pivoted on a stud 89 carried by a bracket 90 secured to the rear rail 11. Whenever the tabular lever 36 is operated by the arm 39, the bell crank 88 is actuated by the lever 36 and causes the link 85 to be drawn to the right (Fig. 1) thereby rocking the detent lever downwardly to a position to the left of a lug 59d extending at right angles to the slide 59. This prevents the slide 59 from being drawn to the left (Fig. 1) and thereby prevents movement of the lever 27 (Fig. 5) far enough to lock the carriage return clutch in the engaged position. The lever 27 will only be permitted to move far enough to allow the clutch to slip which will not cause any damage. On the other hand, if the slide 59 is moved to the position of Fig. 2, the lug 59d takes the position underneath the detent lever 84 and prevents the latter from rocking clockwise in Fig. 2. This prevents operation of the lever 36 by the arm 39 in the event that the tabulating key is depressed. The lever 88 also has a link connection to the detent assembly 91 which controls the usual carriage brake 92 associated with the spring motor 93 which drives the carriage in its letter spacing movements. This spring motor and the brake 92 are pivotally mounted at 94 on a suitable part of the main framework and may be similar to the ones disclosed in Patent No. 2,056,364.

Provision is made for returning the carriage to a position intermediate the right and left hand marginal positions under control of the intermediate stop 15. For the purpose of arresting the carriage in an intermediate position there is provided a partial carriage return counter stop 95 (Figs. 1 and 2) which is in the form of an arm having a longitudinal slot cut in the upper end thereof and is pivoted at its lower end to a bell crank 96. The bell crank 96 is pivoted on a stud 97 carried by the frame 49 and is formed with a lug 96a having a slot loosely receiving an offset lug 76b formed in the member 76 whereby the latter is supported and guided for horizontal movement by bell crank 96 and will be raised whenever the bell crank 96 is rocked counter-

clockwise (Figs. 1 and 2). The bell crank 96 serves as an anchor for the spring 61 which operates the slide 59. A spring 98 anchored to a fixed pin and to the partial stop 95 near its midpoint holds the upper end of the partial stop constantly in engagement with a lug 46c formed in the slide 46. Spring 61 holds bell crank 96 against a stop pin 96c on frame 49.

When the dash-pot lever 47 is released and slide 46 is drawn by the spring 50 to the right (Fig. 1) to the position of Fig. 2, the lug 46c will move the partial counter stop 95 in a clockwise direction to the position of Fig. 2. Unless the partial stop 95 is elevated, however, this movement of the partial stop has no effect. Thus, during a normal return movement, the upper end of the partial stop 95 clears the lug 16b on the left hand marginal stop 16. The intermediate stop 15 is provided with an offset lug 15a designed to engage the upper end of the partial stop 95 when the latter has been raised to elevated position but the lug 15a is well above the level of the lug 16b whereby the lug 15a normally clears the end of the partial stop 95.

For the purpose of moving the partial stop 95 upwardly into the path of the lug 15a, means is provided for moving the slide 59 an additional extent to the left from the position shown in Fig. 2. Pivotally mounted on the stud 97 alongside of the bell crank 96 is a lever 99 which is connected to the same arm of lever 96 as the spring 61 by means of a considerably stronger spring 100. The lever 99 has a portion thereof abutting a pin 96b (Fig. 2) on the bell crank 96 whereby the effect of the spring 100 is to cause the bell crank 96 and lever 99 to rotate as a unit when operated by the following means.

The slide 59 is provided with a lug 59e which engages one arm of the lever 99 whereby, when the slide 59 is moved to the left a further extent from the position of Fig. 2, the lever 99, through the spring 100, moves the bell crank 96 counterclockwise, thereby elevating the partial stop 95 sufficiently to bring the upper end thereof into the path of movement of the lug 15a on the intermediate stop 15. It would be possible to use a one-piece lever in place of the two-part lever assembly comprising the bell crank 96, lever 99, and spring 100 were it not for the possibility that the partial stop 95 might happen to be directly underneath the lug 15a at the time the partial carriage return key is depressed. In such an event, the movement of the slide 59 would be blocked and the operator would have no means of knowing what was the trouble although no harm would be done. For this reason, the spring 100 is provided which will be stretched in the event the slide 59 is moved while the partial stop 95 is obstructed by the lug 15a and the carriage return clutch will be permitted to engage and the carriage returned against the left hand marginal stop.

If the position of the carriage is such that the lug 15a is in any position to the right (Figs. 1 and 2) of the partial stop 95, the movement of the carriage to the left in Fig. 2, with the partial stop 95 elevated, will result in the partial stop being rocked counterclockwise, thereby actuating the slide 46 and dash pot 54 through the lug 46c in exactly the same fashion as when a full carriage return operation takes place. Thus the dash pot is effective both with a full return and a partial return of the carriage. However, provision is made to prevent release of the clutch until the partial carriage return key is released. The member 76 is slidably mounted on the bell crank 96 for the purpose of lifting the member 76 far enough for the lug 76a to clear the lug 59a, when the slide 59 is drawn the further extent to the left, the parts being so designed that the lug 76a will be raised above the lug 59a before the latter can contact the lug 76a. Thus, when the dash-pot lever 47 strikes the lug 74a and operates the lever 74 with member 95 elevated, the member 76 will be drawn idly to the right (Fig. 2) without affecting the slide 59. However, the detent 71 will be released but will not have any effect insofar as releasing the slide 59 is concerned as additional means is provided to hold the slide 59 in the second of its two alternative positions. This means is best shown in Figs. 4 to 7 which illustrates various positions of the keys.

It will be noted with reference to Fig. 5, which shows the normal position of the back space, partial return, and full carriage return keys, that the partial return key PCR is provided with an extension 34a. The latter underlies a lug 100a in a latch lever 100 pivoted at 101 to a bracket 102 secured to the sub-frame 32. A spring 103, anchored to the bracket 102 and to a lug formed in the latch lever 100, holds the lug 100a in contact with the extension 34a.

With the full carriage return key CR in its normal elevated position, as shown in Fig. 5, the latch lever 100 clears a lug 65a formed in the lever 65, whereby the bell crank 63 is free to move the lever 65 bodily to the left in Fig. 5. When the partial return key is held depressed, as shown in Fig. 6, the latch lever 100 is raised into engagement with lug 65a, whereby the subsequent rocking of the bell crank 63 by the lever 27 will cause the lever 65 to rock in a counterclockwise direction relative to the lever 63 and, since the pivot 64 for the lever 65 likewise moves to the left, the link 66 will be moved a greater extent to the left than it is when the main carriage return key CR is depressed instead of the partial carriage return key PCR.

It is clear that the slide 59 (Fig. 2) will be drawn to the left in that view an amount approximately equal to the amount which it has been moved from the position of Fig. 1 to the position of Fig. 2. As explained above, this additional movement of the slide 59 causes the elevation of the partial stop 95 and shifts the member 76 from cooperation with the lug 59a. Since the partial return key PCR is held down and latch 100 remains in the effective position, the link 66 and consequently the slide 59 will be held by lever 27 in their extreme shifted positions. It will be remembered that the lifting of the link 76 prevents disengagement of the clutch by actuation of the slide 59 to the right in Fig. 2 and there is no other means actuated by the carriage for disengaging the clutch. Thus, when the partial return key is held down, the partial stop 95 remains in position and when the carriage actuates the dash-pot lever 47 and is arrested by the cooperation of the partial stop 95 and the lug 15a on the intermediate stop, the clutch remains engaged and will merely slip.

For the purpose of releasing the clutch when the carriage has been arrested by the partial stop 95, provision is made for a positive actuation of the bell crank 63 in a clockwise direction from the position of Fig. 6. This figure shows the position in which the lever 27 and parts actuated thereby, including the bell crank 63, remain when the carriage has come to rest and the

partial carriage return key is held depressed. The back space cam unit, not shown, but which is a single lobe cam unit like the cam unit 30 in Fig. 4, is utilized for this purpose. This cam unit is controlled by the key BS and is located directly behind the cam unit 30 in Fig. 5. The back space cam unit is connected by a link 104 (Figs. 4 and 5) to a lever 105 which is pivoted at 106 on a rod which also serves as a pivot for the key levers of the keyboard. The lever 105 is connected by a link 107 to a bell crank 108 which in turn, through a link 109 (Figs. 1 and 2), is connected to the third arm of the detent lever 71. A second link 110 (Fig. 1) is connected to the back space pawl 78 in a well known way, whereby the latter is actuated each time the back space key BS is depressed.

The arm of lever 108 to which the link 107 is connected is provided with a lug 108a (Figs. 1, 4, and 5) which extends downwardly into the path of a lug 67a formed on one arm of the three-arm lever 67 whereby, when the lever 108 is rocked in clockwise direction by the operation of the back space cam unit, the lever 67 will be rocked counter to its movement during a full carriage return operation or counterclockwise in Fig. 4. This has the effect of rocking the bell crank 63 clockwise in Fig. 6 with the result that the horizontal arm thereof, acting upon the underside of lever 27, bends the toggle which holds the carriage return clutch 23 in the engaged position and effects the disengagement of the clutch.

Provision is made for causing the operation of the back space cam unit automatically whenever the partial carriage return key PCR is released. With reference to Figs. 4 to 7, there is provided a latch lever 111 which is pivoted at 112 on the side of the key lever for the partial carriage return key. This latch lever 111 is actuated by a spring 113 mounted on the key lever of the partial carriage return key PCR and tends to urge the latch lever 111 in a clockwise direction. However, the spring 113 is considerably weaker than the spring 103 actuating the lever 100 and the key actuating spring 114 whereby the latch lever 111 is held in the position of Fig. 5 by virtue of one of its arms contacting a lug 115a formed in a bracket 115 secured to the sub-frame 32. This lug 115a also acts as a stop for the key PCR which is shorter than the others.

Pivoted on a long stud 116 carried by the bracket 115 is a bail 117 having an arm formed with an offset lug 117a in the plane of the latch lever 111 but normally occupying the position shown in Fig. 5. The bail 117 is engaged by a hook-shaped extension 118a on the key lever 118 of the back space key BS, as shown in Figs. 5 and 6. When the partial return key PCR is depressed as shown in Fig. 6, the latch lever 111 snaps over the lug 117a in the bail 117 as shown in Fig. 6. This movement does not produce any immediate effect. As soon as the operator observes that the carriage has stopped after striking the partial stop 95, the key PCR will be released and, due to the considerably greater tension of the springs 103 and 114 than the spring similar to 114 which operates the back space key BS, the latter will be drawn downwardly owing to the fact that the key PCR in rising will rock the bail 117 counterclockwise from the position of Fig. 6 to the position of Fig. 7. This releases the back space cam unit and, by the operation of the latter, through the lugs 108a, 67a, as explained above, effects the disengagement of the clutch 23. Through the connection of the link 109 (Figs. 1 and 2) to the detent lever 71, the latter is actuated to release the slide 59.

As usual, in carriage return mechanisms, provision is made for allowing the carriage to move a slight distance, less than a letter space, beyond the marginal position on a return movement in order to insure that the usual escapement pawls will properly engage the rack or escapement ratchet as the case may be, to prevent the carriage from skipping a letter space after the return movement is completed. It is quite possible that the slide 59 might be sluggish in returning to the position of Fig. 1 after a partial return operation. When the clutch is disengaged at the end of the partial carriage return operation, the carriage will jump a slight distance to the right (Fig. 1) and the levers 47, 74 will move slightly clockwise. This would allow the detent lever 71 to relatch the slide 59 if the latter were sluggish in moving to the right. The operation of the detent lever 71 by the link 109 insures that the detent lever 71 will not only be released but will be held out of engagement with the lug 59b a sufficient length of time to permit the slide 59 to restore to the right completely. When the carriage is finally stopped and is still momentarily under the influence of the carriage return tape, the detent lever 71 will be held clear of the lug 59b but the leverage ratio of the lever 74 is so high that the slight movement of the lever 47 in a clockwise direction is sufficient to allow the detent lever 71 to re-engage the lug 59b. Thus there is a possibility, perhaps remote, that a jam of parts might result were it not for the connection of the link 107 to the detent lever 71. The positive actuation of the bell crank 63 in a clockwise direction (Fig. 5) by the operation of the back space cam unit causes the link 69 to be thrust to the right to and past the position of Fig. 2 simultaneously with the rocking of lever 71 and the elevation of lug 71a, whereby the movement of the slide 59 and the lug 71a are so closely mechanically related in time as to make it impossible to jam the mechanism. The actuation of the back space mechanism during a partial carriage return operation does no harm although the lever 82 is then effective to prevent movement of the back space pawl 78. Thus, during the carriage return operation, the link 110 merely rocks the pawl 78 without driving it into engagement with the escapement rack. This is a usual feature of the back space mechanism disclosed in Patent No. 1,873,553.

An advantage of the carriage return mechanism described herein is that the carriage is drawn positively to the final stopping point and reliance is not placed upon momentum to carry the carriage to its final position, contrary to usual constructions in which the driving force on the carriage is terminated in advance of stoppage and dependence is placed upon kinetic energy stored in the carriage to carry it to the final position. A machine of this last type is disclosed in Patent No. 1,753,450 on which the present mechanism is an improvement. In this machine, the means which disengages the clutch to cause the carriage to come to rest to its final position as determined by the marginal stop is so arranged that the clutch is disengaged eight or ten letter spaces before the carriage finally stops and the final movement of the carriage is effected by momentum. Naturally, this control of the carriage movement is more or less of a compromise because lines vary considerably in length whereby the extent of return movement of the carriage necessarily considerably vary and it is necessary to provide

a margin of safety which is controlled by the shorter runs of the carriage. The result is that on long runs of the carriage the carriage is arrested with considerable shock whereas on extremely short runs of the carriage there may be barely enough energy to effect the disengaging of the clutch due to the fact that the carriage does not acquire much momentum.

In the invention described herein, the mechanism for disengaging the clutch is designed so that the disengagement of the clutch takes place with a very small amount of final movement of the carriage and the power for returning the carriage is kept applied until almost the instant the carriage stops. By the provision of the dash pot which is operative both on a full return and a partial return, it is possible to do this without shock to the parts. On a short return it is imperative that the power be kept applied as long as possible since there is relatively little kinetic energy in the carriage and the coasting tendency is not so great. Under this condition there is less likelihood of shock and the dash pot is not vital. On a long run of the carriage, there is considerable kinetic energy in the carriage and consequently the arresting of the carriage will be accompanied with great shock unless some means is provided to prevent it and the dash pot is of great advantage. In the machine disclosed in the patent just mentioned, a compromise is made by so locating the release lever which controls the tripping of the clutch that it is effective eight or ten spaces before the carriage is finally stopped. This minimizes the effects of the shock on a long run and still enables the carriage to return positively. On extremely short returns, however, the carriage return mechanism is, relatively speaking, less positive and the carriage is not always brought fully to the marginal stop. It is mainly to cure this last effect that the mechanism described herein has been arranged so as to maintain the driving force on the carriage practically to the point where the carriage stops.

Another advantage of the invention disclosed herein is that the dash pot is normally latched in an ineffective position by the slide **59** whereby the carriage may be manipulated by hand if necessary, without overcoming the obstruction offered by the dash pot. While it is not broadly new to provide typewriter carriages with dash pots and other retarding devices for reducing shock, it is usually customary to have the dash pot always in the effective position whereby if the carriage is moved by hand close to the marginal stop, the dash pot offers obstruction to the movement of the carriage. In such constructions, it is usually necessary to provide a returning spring which restores the dash pot to the effective position after it has been operated to cushion movement of the carriage. This spring necessarily must be fairly powerful in order to overcome the sluggishness of the piston of the dash pot due to the closeness of fit of the latter in the cylinder and the necessity for pushing air out of one side of the dash pot and driving it into the other, all of which contributes to make it necessary to have a fairly powerful spring with an ample margin of safety to restore the dash pot to the effective position. In the present case, the only time the carriage has to overcome the spring which conditions the dash pot for operation is when the dash pot is effective to cushioning the carriage movement. In other words, the spring is normally kept under maximum tension and the restoration of the dash pot takes place as a preliminary to the use of the dash pot for cushioning shock. The carriage is thus always just as free as it would be if no shock absorbing means at all were provided.

This feature is of considerable importance for some classes of work where the carriage is often returned by hand or manipulated by hand in the neighborhood of the marginal stops. In spite of the provision of power means for returning the carriage and line spacing the platen and operating the tabulating mechanism and other devices, it is nevertheless a fact that most stenographers and typists do manipulate the carriage and the line spacing mechanism by hand to some extent. For instance, in the writing of index cards, it is very common practice to turn the platen by hand and position the carriage with the same hand on the platen rotating knob as one or the other of the operator's hands must be kept a fair share of the time in the neighborhood of the platen knobs to position the card, and the nature of the work demands that the platen be adjusted very small extents to enable material to be properly located in blanks. Typical of this work is registration cards which are commonly printed in very fine type with rather inadequate blanks for receiving the information, requiring a great deal of manipulation of the platen by hand. In such work the marginal stops are often set to determine the material to be written at one end of the card and the shortness of the blanks requires a certain amount of manipulation of the carriage close to the marginal point on a card. In work of this nature the presence of a normally effective dash pot would place extra work upon the operator in moving the carriage by hand close to the marginal position. This extra work might not be important where only a few cards or blanks are involved but considered in terms of a day's labor can be very exhausting.

While there has been shown and described and pointed out the fundamental novel features of the invention as applied to a single embodiment, it will be understood that various omissions and substitutions and changes in the form and details of the device illustrated and in its operation may be made by those skilled in the art without departing from the spirit of the invention. It is the intention therefore to be limited only as indicated by the scope of the following claims.

What is claimed is:

1. In combination with a carriage for a typewriting machine, power means to return the carriage, normally ineffective margin defining means associated with the carriage, carriage retarding means, means to initiate operation of the carriage return means and power means set in operation by the initiating means for rendering the retarding means cooperative with the margin defining means.

2. In a machine of the class described, the combination with a carriage; margin defining means for the carriage including a marginal stop and a counter stop, one of which stops is engageable with and movable by the other in consequence of a return movement of the carriage; a carriage return key, a carriage retarding device operable by the movable stop, means to normally hold the movable stop in an ineffective position in which it is not movable by the other stop and in which the movable stop holds the retarding device in an ineffective position, means tending to move the movable stop to an effective position from which it will be restored by movement by the

other stop during the return movement of the carriage, and means controlled by said key to release said holding means to render the movable stop movable by the other stop when the carriage is returned.

3. In a machine of the class described, the combination with a carriage, a margin defining element on the carriage, an element cooperating with the first named element and engaged thereby during a carriage return movement to arrest the carriage in a marginal position, a carriage retarding device including a member engageable by the margin defining element during its movement toward the second element for operating the carriage retarding device, means to prevent operation of said member by the margin defining element, carriage return mechanism, means for initiating operation of the carriage return mechanism, and means controlled by the initiating means for rendering the preventing means inoperative whereby to enable the retarding device to be effective.

4. In combination with a carriage, return mechanism therefor, a carriage return initiating device for said mechanism, means to determine the point to which the carriage is returned, a carriage retarding device for cushioning stoppage of the carriage in the position defined by the determining means, and power means set in operation by the carriage return initiating device for rendering the retarding device operable by the carriage.

5. In combination with the carriage of a typewriting machine; a margin defining element, an element cooperating therewith to arrest the carriage in a marginal position, one of said elements being movable with the carriage, the other being operable by movement of said one element; a carriage cushioning device, means to normally hold the carriage cushioning device in an ineffective position, carriage returning means, an element for causing operation of the carriage returning means, and means controlled by the last named element for releasing the holding means to allow movement of the cushioning device into position to be operated by the movement of one of the first two elements.

6. In combination with the carriage of a typewriting machine, a pair of elements for defining two extreme marginal positions of the carriage, an element defining an intermediate marginal position of the carriage; a main stop element engageable by one of the first named pair of elements and a supplemental stop element engageable by the intermediate element, both said main and said supplemental stop elements being movable into a position to be engaged by one of the first elements and the intermediate marginal element, respectively, for arresting the carriage in the extreme or intermediate positions, respectively, during returning movement of the carriage; a carriage cushioning device operable by both the main and supplemental stop elements, and including means tending to move the cushioning device from an ineffective to an effective position; means operable two different extents and normally holding the carriage cushioning device in an ineffective position and, when moved either extent, releasing the cushioning device to render it operable by movement of the carriage through movement of one of said extreme marginal defining elements or through movement of the intermediate marginal defining element, the movement of the movable means the additional extent actuating the supplemental stop element into the path of the intermediate margin defining element; carriage returning means, an element for initiating an operation of the carriage returning means, means controlled by said initiating element for moving the holding means an extent to release the cushioning device and thereby render it operative by one of the first named margin defining elements, a second element for initiating operation of the carriage returning means, and means controlled by the second initiating element for causing the holding means to move the additional extent sufficient to actuate the supplemental stop element into the path of the intermediate margin defining element.

7. In combination with the carriage of a typewriting machine, carriage returning means, a main marginal stop for defining an extreme limit of the travel of the carriage, an intermediate marginal stop for defining an intermediate position of the carriage, a counter stop cooperating with the main marginal stop to arrest the carriage at its extreme limit of travel, a supplemental counter stop movable into cooperation with the intermediate marginal stop to arrest the carriage in the intermediate position, a cushioning device including an element engageable by the main marginal stop to actuate the cushioning device, said element also being operable by the supplemental counter stop cooperating with the intermediate marginal stop, a member normally holding the cushioning device and the engageable element in a retracted position so as to be unaffected by either of the marginal stops, said member being movable a predetermined extent to render the cushioning device operative by the main marginal stop and movable an additional extent to both render the cushioning device operative and actuate the supplemental counter stop cooperating with the intermediate stop into a position to be engaged thereby, main carriage return initiating means, partial carriage return initiating means, and means controlled by both the main carriage return and partial carriage return initiating means for actuating said holding member two different extents according to which of the initiating means is operated.

8. In a machine of the class described, the combination of a carriage, carriage return means; a plurality of elements for controlling the operation of the carriage returning means, each for determining a different extent of return of the carriage; a plurality of adjustable stop elements for arresting the carriage in different positions during its return movement, each of said elements corresponding to one of the first named elements; a member movable a plurality of different extents corresponding to different stopping positions of the carriage defined by the stop elements, a plurality of counter stops, at least one of which is movable into cooperation with one of said stop elements for determining short returns of the carriage and normally inoperative, and means controlled by one of the first named elements for moving said member an extent sufficient to render the short return counter stop operative and movable a lesser extent insufficient to operate the short return counter stop with an operation of another of the first named elements.

9. In combination with a carriage, a marginal stop, a normally ineffective carriage retarding device, a counter stop movable to a position to be engaged by the marginal stop during a movement of the carriage, said counter stop being normally retracted and further movable to an advanced position clear of the marginal stop and having

a connection to the carriage retarding device to operate said device when the counter stop is engaged by the marginal stop at the advanced position, said retarding device tending to move the counter stop to the advanced position from which the carriage retarding device will be operated by the marginal stop by retraction of the counter stop; and means to render the retarding device effective to move the counter stop to the advanced position and at the same time to move the counter stop into the path of the marginal stop.

10. In combination with a carriage, a pair of marginal stops, carriage retarding means including a cushioning device and a normally retracted element operatively connected with the cushioning device and movable to an advanced position in which it is engaged by one of the marginal stops but not the other, said element when engaged and moved to retracted position by the said marginal stop also operating said device; a counter stop movable to a position to be engaged and operated by the second marginal stop and also arranged to move said element from the advanced to the retracted position to thereby operate the cushioning device; a member for holding said element and the cushioning device in a retracted position, said member being movable an extent to merely release said element for operation of said element by the first marginal stop, and means effective upon a greater movement of said member for also moving the counter stop into the path of the second marginal stop.

11. In combination with a carriage, a pair of marginal stops; carriage retarding means including a cushioning device and a normally retracted element operatively connected with said device and movable to a position to be engaged and operated by one of the stops but not the other, said element when engaged and moved by the said marginal stop also operating said retarding means; a counter stop movable to a position to be engaged and operated by the second marginal stop and arranged to move said element to operate the retarding means; a member for holding said element and retarding means in a retracted position, said member being movable an extent to merely release said element for operation of said element and consequently the retarding means by the first marginal stop; means effective upon a greater extent of movement of said member for moving the counter stop into the path of the second marginal stop, a pair of carriage return keys, and means selectively controlled by said keys for moving said member said two different extents.

12. In combination with a carriage, a pair of marginal stops, a main counter stop engageable by one only of the marginal stops, a normally inactive supplemental counter stop movable to a position to be engaged by only the second marginal stop; means to mount the main stop for movement from a retracted final stopping position to a position to be engaged by the first marginal stop a predetermined distance in advance of the final stopping position, said supplemental counter stop also being adapted to move the main counter stop a similar distance back to the retracted position; a carriage retarding device operable by the main stop, means to hold the main stop in retracted position; and means including an element movable to one position to release the main stop for operation by the first marginal stop and to a second position to release the main stop for operation by the first marginal stop and additionally move the supplemental counter stop into position to be engaged by the second marginal stop.

13. In combination with a carriage, a plurality of marginal stops for defining different stopping positions of the carriage; a plurality of counter stops, each movable from a retracted position to a position to be retracted by a particular marginal stop, a carriage retarding device including an element retractable by said counter stops and means for moving the counter stops and retractible element away from retracted position; and releasable means to hold the counter stops and said element in retracted position, said element, when held in retracted position, normally holding the retarding device in an ineffective position.

14. In combination with a carriage, a plurality of elements for defining different columnar positions of the carriage, means to return the carriage, a main counter stop movable from a normal position defining a final stopping position of the carriage to a position in advance of the final position so as to be operable by one of the column defining elements during a return movement of the carriage, a normally retracted partial return counter stop movable by the main counter stop to a position in advance of a partial return stopping position and further movable to a position to be engaged by another column defining element and operated thereby during a partial return movement of the carriage, and a carriage retarding device operable by the restoring movement of the main counter stop when the latter is actuated by either of the column defining elements.

15. In a carriage return mechanism, a carriage; a plurality of marginal stops, each defining a different position of the carriage; a plurality of counter stops normally in a retracted position and movable into a position to be engaged and moved by the marginal stops during return movement of the carriage to its final stopping positions, each of said counter stops being directly operable by the carriage by engagement with a different marginal stop, one of said counter stops being also indirectly operable by the carriage through a second marginal stop and the counter stop for the second stop; and a carriage retarding device connected to the indirectly operable counter stop and operable thereby irrespective of whether the indirectly operable stop is operated directly by the marginal stop to which it is associated or indirectly by the second marginal stop.

16. In combination with a carriage, power means to return the carriage, a plurality of selectively operable elements for initiating operation of the returning means and corresponding to a plurality of carriage return positions, a plurality of return position defining elements; a plurality of counter stops, each corresponding to and movable by a different one of the defining elements, a member movable a plurality of different extents for rendering different ones of the counter stops effective, and means controlled by the selectively operable elements and operated by said power means for moving the member different extents.

17. In combination with a carriage, power means to return the carriage, a plurality of selectively operable elements for initiating operation of the returning means and respectively corresponding to a plurality of carriage return positions, a plurality of return position defining ele-

ments, a plurality of counter stops each corresponding to and movable by a different one of the defining elements, a member movable a plurality of different extents for rendering different ones of the counter stops effective, means controlled by the selectively operable elements and operated by said power means for moving the member different extents, and a carriage retarder normally held in ineffective position by said member and operable by said counter stops, said retarder including means under control of said member for moving the retarder to an effective position.

18. In combination with a carriage, power means to return the carriage, a plurality of selectively operable elements for initiating operation of the returning means and corresponding to a plurality of carriage return positions, a plurality of return position defining elements; a plurality of counter stops, each corresponding to a different one of the defining elements, each of said counter stops being normally located in a home position defining the final stopping point of the carriage and movable away from the home position, counter to carriage return movement, to an advanced position from which, by engagement with the associated return position defining element, each stop will be moved back to the home position by such element; a normally inactive carriage retarder including means tending to move the retarder and said counter stops to the active position and to the advanced positions, respectively; a member holding said counter stops in home position and also holding said retarder in the inactive position and movable a plurality of extents for rendering the counter stops selectively effective and for releasing the stops for said movement from home position to advanced position; and means controlled by the selectively operable elements for moving said member different extents.

19. In a machine of the class described, the combination of a carriage, margin defining means comprising two coacting parts, one engaged by the other when the carriage is returned; carriage return mechanism, a carriage return key, a power device controlled by said key for rendering the carriage return mechanism operative, a normally inactive carriage cushioning device operable by one of the parts of the margin defining means; and mechanism controlled by said power device for rendering the cushioning device operable by movement of the carriage through the margin defining means including a member movable by one of the parts of the margin defining means for actuating the cushioning device.

20. In a machine of the class described, a carriage, a margin defining element on the carriage, a normally ineffective margin defining element settable in a position to be engaged and moved by the first named element, carriage return mechanism, a carriage return key, a power device controlled by said key for rendering the carriage return mechanism operative, a carriage retarding device; mechanism to hold the carriage retarding device and the second element in an ineffective position and including means operative, when the holding means is released, to set the second named element to thereby render the retarding device operable by the first element; and means controlled by the power device for releasing the holding mechanism.

21. In a machine of the class described, the combination of the carriage, a margin defining element on the carriage, an element movable by the margin defining element when the carriage is returned, a carriage retarding device operably connected to the movable element, means to hold the movable element in a retracted position in which it is inoperable by the margin defining elements on the carriage whereby to maintain the retarding device ineffective, a carriage return key, and means controlled by the carriage return key for releasing the holding means to render the retarding device operable by the first element.

22. In a machine of the class described, the combination of the carriage, a margin defining element on the carriage, an element movable by the margin defining element when the carriage is returned, a carriage retarding device operated by movement of the movable element, means to hold the movable element in a retracted position in which it is inoperable by the margin defining element on the carriage whereby to maintain the retarding device ineffective, a carriage return key, and power means controlled by the carriage return key for releasing the holding means to render the retarding device operable by the first element.

23. In a machine of the class described, in combination with the carriage, carriage return mechanism, a key for controlling the carriage return mechanism, a margin defining element moved by the carriage, a counter stop element movable parallel with and by said first named element, means to hold said counter stop element in a final stopping position, which, by the cooperation of said counter stop element with the element moved by the carriage, determines the final stopping position of the carriage; means to move said counter stop element to an advanced position to be engaged by the first element and restored to final stopping position when the carriage is returned, a carriage retarding device connected to said counter stop element and operable by the restoration of the counter stop element, means to hold the counter stop element in the retracted position, and means conrolled by said carriage return key for releasing the holding means.

24. In a machine of the class described, the combination of the carriage, a marginal stop moved by the carriage, a counter stop element engageable by the marginal stop and slidable from a retracted home position defining the marginal position of the carriage in cooperation with the marginal stop, to an advanced position to be engaged by the marginal stop when the carriage is returned, in advance of arrival of the carriage at its marginal position; a carriage retarder connected to said slidable counter stop element and effective to retard carriage return movement when said slidable counter stop element is returned to its home position by the marginal stop, a supplemental marginal stop moved by the carriage, a supplemental counter stop normally occupying an ineffective position and movable into a position to be engaged by the supplemental marginal stop, said supplemental counter stop also being movable to an advanced position by the first named counter stop, a main carriage return key, a supplemental carriage return key, means controlled by both of said keys for moving the first counter stop to the advanced position and controlled by the supplemental carriage return key for moving the supplemental counter stop into the path of the supplemental marginal stop.

25. In combination with a carriage; means defining a stopping position of the carriage including a marginal stop and a counter stop, one of

which is movable into a position to be engaged and moved by the other, a carriage retarding element actuable by the movable stop, means to set the carriage retarding element in a position to be operated by the movement of the movable stop, and means operable to move the movable stop into position to be engaged by the other stop and at the same time render the setting means operative to set the retarding element.

26. In combination with a carriage, a pair of marginal stops for defining two different stopping positions of the carriage, carriage retarding means including a normally retracted member acting as a counter stop in cooperation with one of said marginal stops to arrest the carriage in the position defined by said stop and including means to move said member from a retracted position to an advanced position in which said member is engageable and retractible by the cooperating marginal stop in advance of the final stopping position of the carriage; a supplemental counter stop movable in one direction into the path of the second marginal stop to be engaged thereby and also movable by the said member from a retracted position to an advanced position, said supplemental stop when moved by the carriage through the second marginal stop also moving said member to the retracted position, said member when retracted as aforesaid by either marginal stop also operating the retarding means; and means holding said member in retracted position and movable to two different positions to release in both cases the retracted member, said means when moved to one position merely releasing the retracted member to enable the retarding means to be operated by the carriage through the first marginal stop, said means when moved to the second position, also moving the supplemental stop into the path of the second marginal stop.

27. In combination with a carriage, a plurality of marginal stops for defining different stopping positions of the carriage; a plurality of counter stops each corresponding to one of said marginal stops, all of said counter stops being movable from a retracted position defining the final stopping positions of the carriage, counter to the movement of the carriage to an advanced position wherein each counter stop, during the return movement of the carriage, is engaged by its respective marginal stop and restored to the retracted position, one of said counter stops being additionally movable transversely of the returning movement of the carriage into the path of its corresponding marginal stop; means to move said counter stops to the advanced position; means to hold both stops in the retracted position defining the final stopping positions of the carriage, said holding means being movable to at least two positions to release the counter stops for movement to the advanced position and when moved to the second position, additionally moving the second counter stop transversely of its movement to the advanced position into the path of the second marginal stop, and normally ineffective carriage damping means rendered effective by the moving means and operated by the retracting movements of said counter stops.

28. In a machine of the class described, a carriage, carriage return mechanism, a member for initiating operation of the carriage return mechanism, margin defining means for the carriage including a member moved by the carriage and a member movable by the first member, a normally ineffective carriage damping means operable by the movable member, and mechanism controlled by the initiating member for rendering the damping means operable by the movable member.

29. In a machine of the class described, a carriage; margin defining means including two elements, one movable by the other when the carriage is returned; a normally idle carriage damping means including a member movable by the movable margin defining element, means to hold said member in a position in which the damping means is not operated by the movable margin defining means, carriage return means, a member for initiating operation of the carriage return means, and means controlled by the initiating member for releasing the holding means.

30. In a machine of the class described, a carriage; margin defining means including two elements, one moved by the other when the carriage is returned; a normally idle carriage damping means including a member movable by the movable margin defining element, means to hold said member in a position in which the damping means is not operated by the movable margin defining means, carriage return means, a member for initiating operation of the carriage return means, means controlled by the initiating member for releasing the holding means, a second margin defining means including a second element moved during the return of the carriage and by the releasing means movable from an ineffective to an effective position, a second carriage return initiating means, and means controlled by said second initiating means for causing the releasing means to also move the second mved element to effective position.

31. In a machine of the class described, a carriage, carriage return mechanism, a member for initiating operation of the carriage return mechanism, margin defining means for the carriage including a member moved by the carriage and a member movable by the first member, a normally ineffective carriage damping means operable by the movable member, mechanism controlled by the initiating means for rendering the damping means operable by the movable member; a supplemental margin defining means including a supplemental element movable by the carriage and a supplemental member movable by the supplemental element, said supplemental member being normally in an ineffective position and having a connection to said mechanism for movement to a position to be moved by the supplemental element; a second initiating member, and means controlled by the second initiating member for causing said mechanism to also move the supplemental member to effective position.

RICHARD VON REPPERT.