

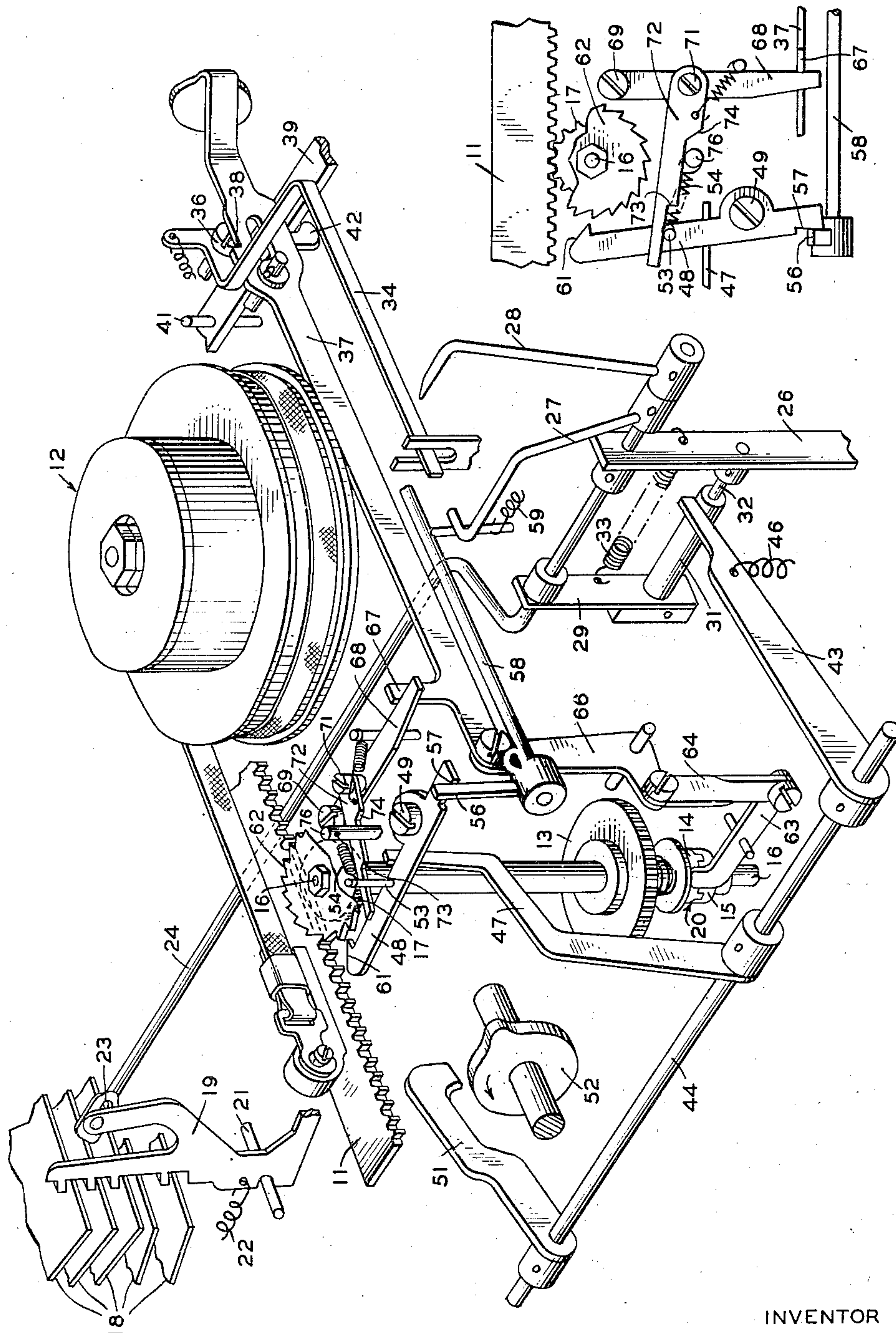
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BACK SPACING MECHANISM FOR TELEGRAPH PRINTERS

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BACKSPACING MECHANISM FOR
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7 Claims. (Cl. 178—25)

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This invention relates primarily to telegraph mechanisms and, more particularly, to mechanisms whereby the movable element of a page printing telegraph machine such as the web holding platen carriage or the printing unit may be back-spaced or moved in a direction opposite to the letter spacing direction one or more character spaces.

It is often desirable in telegraphic communications to be able to control a remote recording instrument so that either the platen carriage or the printing unit, whichever is movable, may be back-spaced or moved in a carriage return direction a part of a line or to some position other than the initial starting position whereby for example a part of a line may be blanked out. Accordingly, it is one of the objects of the invention to provide a back-spacing mechanism for a telegraph page printer whereby the carriage thereof may be back-spaced or moved in a direction opposite to a letter-spacing direction to any point in its path of travel. In this connection another object of the invention resides in the provision of means whereby the movable carriage of a telegraph page printer may be back-spaced one character space at a time.

Another object of the invention resides in a provision of means of accomplishing the above operations wherein the receipt of a conditioning code group conditions the receiving printer so that the receipt of code group which normally performs another printer function is effective to back-space the printing unit a predetermined distance for each such received latter code group.

In connection with the above, a more specific object of the invention resides in the provision of means whereby the receipt of a carriage return code group, normally effective to return the carriage to an initial position, effects movement of the carriage in a back-spacing or carriage return direction a predetermined distance when such carriage return code groups are preceded by a conditioning code group.

The above and further features and objects of the invention will be more apparent in the following detailed description wherein reference is made to the accompanying drawings in the latter of which—

Fig. 1 is a perspective view of certain parts of a page printer with the elements comprising the

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present invention associated and cooperating therewith; and

Fig. 2 is a plan view of some of the elements of Fig. 1.

5 The invention as shown in the drawings and hereinafter described as being applied to the telegraph page printer of the type disclosed in U. S. Patent No. 1,904,164, to S. Morton, granted August 18, 1933, and the said patent is made in a part of the present application as if included herein. While the invention is shown applied to this particular printer it will be obvious that the principles thereof may equally well be applied to various other printers.

10 The said Morton et al. patent has a movable carriage consisting of a typing unit or type basket which moves back and forth relative to a stationary recording web. In the drawings only the rack 11 of the movable typing unit or carriage is shown and the rack with its elements moves to the left as shown in the drawings one space at a time in conjunction with normal recording and word spacing operations. During such movement of the typing unit a spring in the drum 12 is tensioned which is effective in response to a carriage return code group to return the typing unit to an initial position for the beginning of a new line of print.

15 The advancement of the typing unit, wherein the rack 11 moves to the left, is accomplished by rotating a gear 13 through mechanism described and shown in the said Morton et al. patent. The gear 13 is rotatable with the movable upper part 14 of a toothed clutch 20. The clutch also has a lower part 15 secured to the shaft 16 for rotation therewith. The gear 13 is freely mounted on the shaft 16 and the upper part 14 of the clutch is movable axially on the shaft to disengage the teeth thereof from those of the lower part 15. Adjacent the upper end of the shaft 16 is a pinion 17 engaging the teeth of the rack 11 whereby rotation of the shaft and pinion effects advancement of the typing unit. The carriage return code group effects separation of the upper and lower parts 14 and 15, respectively, of the toothed clutch 20 whereupon the lower part 15 together with the shaft 16 and pinion 17 are free to rotate in a reverse direction through the action of the spring drum 12 tending to move the rack 11 toward the right.

The selecting mechanism of the printer includes a plurality of vanes 18 which are tilted into various combinations in accordance with received code groups and the functions of the printer are controlled by a plurality of notched function control levers operatively associated with the vanes 18. When the vanes 18 are set in certain combinations, one or more of the function levers is permitted to pivot to a selected position and thereby control the associated function mechanism. Such a function lever 19 is employed in the present invention to condition the printer for back-spacing movement of the printing unit or carriage. The function lever 19 is pivoted on a rod 21 and has an attached spring 22 normally urging the same toward the vanes 18. When the vanes are set in a predetermined combination the said function lever 19 is permitted to pivot in a counterclockwise direction with the edges of the vanes entering notches in the lever 19. The selector lever 19 has attached thereto by a lost motion slot 23 a rod 24 and selective operation of the lever 19 moves the rod 24 toward the left to a selected position. The rod 24 is guided adjacent its forward end in a guide post 26 and has adjacent this end upwardly extending arms 27 and 28. Also fixed to the rod 24 is a depending member 29 which has extending horizontally from the lower end thereof a sleeve 31. The sleeve 31 is slidable on a rod 32 anchored in the guide post 26 and a spring 33 attached to the depending member and anchored in the post 26 tends to slide the rod 24 with its attached elements to the right. However the spring 22 attached to the function lever 19 is capable of exerting a greater pull on the rod 24 than the spring 33.

When the function lever 19 pivots in a clockwise direction and moves the rod 24 to the left, such movement of the rod places the horizontal upper end of the arm 28 beneath a latching lever 34. The latching lever 34 is pivoted on a shoulder screw 36 and with the end of the arm 28 beneath this lever it is prevented from operating to latch the carriage return lever 37 in an operated position. When movement of the latch lever 34 is not blocked by the arm 28 it is operative to engage a shoulder 38 on the carriage return lever 37 and latch the same in an operated position. Such operation of the latch lever 34 occurs during a normal carriage return function of the printer. Near the end of a normal carriage return function, the carriage engages and pivots the lever 39 in a clockwise direction about the pivot 41, as viewed from above, so that the lever 39 engages the depending arm 42 of the latch lever 34 and moves the same out of engagement with the notch 38 of the lever 37 whereupon the lever 37 returns to its normal position.

Movement of the rod 24 to the left or toward the vanes 18, also moves the sleeve 31 out from beneath the end of an arm 43 secured to a pivot rod 44 whereupon the spring 46 pivots the arm down onto the rod 32. The rod 24 with its attached elements is thereby locked in its operative position but because of the lost motion slot 23 in the end of the rod 24, the lever 19 can return to its normal position while the rod is locked in this selected position. The above movement of the arm 43 rocks the rod 44 in a clockwise direction so that the upper end of an arm 47 thereon moves away from the edge of a pawl 48 pivoted on a shoulder screw 49. This movement of the rod 44 also moves a third arm 51 thereon into a position to be operated by a cam 52.

The pawl 48 has extending therefrom a pin 75

53 to which is attached a spring 54 tending to pivot the pawl in a clockwise direction as viewed in Fig. 2. Such pivoting of the pawl, however, is normally prevented by an arm 56 engaging the surface 57 on the pawl. Selective operation of the rod 24 through its arm 27 causes the shaft 58 upon which the arm 56 is mounted to pivot against the action of a spring 59 and thereby moves the arm 56 out of operative relation with the surface 57 of the pawl 48.

The pawl 48 is thereupon free to pivot in a clockwise direction as viewed in Fig. 2 and moves the hooked end 61 thereof into engagement with a ratchet wheel 62. The ratchet wheel 62 is secured for rotation therewith to the shaft 16 and with the pawl 48 engaging a tooth of the ratchet wheel 62, rotation of the shaft in a clockwise direction is prevented.

In the preferred embodiment of the invention the carriage return code group is employed to back-space the carriage a predetermined distance when such code groups follow the receipt of the conditioning code group. When a carriage return code group is not preceded by a back-spacing conditioning code group, the carriage is returned in the usual manner from any point in its path of travel to its initial starting position. Through mechanisms fully described and shown in the above-mentioned Morton et al. patent the receipt of a carriage return signal causes pivoting of a lever 63 to disengage the elements 14 and 15 of the toothed clutch 20 whereupon the spring drum 12 is effective to perform a carriage return function. The lever 63 when operated by means of a link 64 and a bell crank 66 causes movement of the carriage return lever 37 toward the left. If the carriage return code group is preceded by the conditioning code group which effects selective operation of the rod 24, the lever 37 will not be latched in its operated position by the latch lever 34 since the latch lever in the manner described, will be prevented from moving to a latching position. Accordingly the carriage return operating elements which control the lever 37 will immediately return to their normal position when such operation occurs with the rod 24 in a selected position.

The selective operation of the rod 24 as above described permits the pawl 48 to move into operative relation with the ratchet wheel 62 and thereby prevents rotation of the ratchet wheel in the direction it rotates during a carriage return function. However, in response to a carriage return signal the pawl 48, in the manner to be described, is momentarily operated to permit the ratchet wheel 62 to rotate in a reverse direction one tooth and permits back-spacing of the carriage a corresponding distance.

The lever 37 has extending upwardly therefrom a projection 67 in operative relation with the free end of an arm 68 pivotally mounted on a shoulder screw 69. The arm 68 has pivotally attached thereto by means of a shoulder screw 71 a pawl operating member 72. As the lever 37 moves to the left in response to a carriage return code group, the projection 67 engages the arm 68 to pivot the same in a clockwise direction. This movement of the arm 68 causes a shoulder 73 on the member 72 to engage the pin 53 on the pawl 48 and pivot the same in a counterclockwise direction against the action of its attached spring 54. This movement of the pawl 48 withdraws the hooked end 61 out of engagement with a tooth of the ratchet 62 whereupon the ratchet is free to rotate in a clockwise direction and

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permit back-spacing movement of the carriage. However, the hooked end 61 of the pawl 48 permits the ratchet 62 to rotate only one tooth since the pawl 48 returns to an operated position in time to engage the next tooth. The momentary operation of the pawl 48 is accomplished by disengaging the shoulder 73 from the pin 53 just as the pawl is moved sufficiently to disengage a tooth of the ratchet. This disengagement is effected by pivoting the member 72 which is accomplished by the cam surface 74 thereon engaging the stationary pin 76. Thus in response to a carriage return code group following the back-spacing conditioning code group, the carriage return code group effects operation of the lever 37 and the ratchet wheel 62 is permitted to rotate in a reverse direction one tooth or in the direction permitting back-spacing of the carriage a predetermined distance for each carriage return code group.

The back-spacing movement of the carriage will continue for each received carriage return code group following the conditioning signal or until the receipt of an unconditioning code group. In the preferred embodiment of the invention an unconditioning code group consists of any code group which effects a printing operation and in such operations the cam 52, through mechanisms fully described in the above-mentioned patent, makes one revolution. Such operation of the cam 52 permits the lobe thereon to engage the end of the arm 51 and effects rocking of the rod 44 in a counterclockwise direction. This rocking of the rod 44 moves the end of the arm 43 out of blocking engagement with the end of the sleeve 31 whereupon the sleeve 31 together with the rod 24 and its attached arms are permitted under the influence of spring 33 to move toward the right back into a normal position. Such rocking of the rod 44 also through the arm 47 engaging the pawl 48 moves the pawl back into an unoperated position whereupon the arm 56 on rod 58 latches the same in this unoperated position. Thus the back-spacing mechanism is returned to its normal unoperated position and the printer is conditioned to operate in accordance with received code groups in the usual manner.

While this invention has been described in a preferred embodiment thereof, it will be obvious that various modifications thereof may be made without departing from the spirit or essential attributes thereof and it is desired, therefore, that only such limitations be placed thereon as are specifically set forth in the appended claims.

What is claimed is:

1. In a printing telegraph machine, a carriage normally movable step-by-step in an advancing letter-spacing direction in conjunction with printing and word spacing operations of said machine, means for continuously moving said carriage in a reverse direction to an initial position in response to a first predetermined code group and means responsive to a second predetermined code group to condition said machine to effect movement of said carriage in said reverse direction a predetermined distance in response to following code groups of said first predetermined character.

2. In a printing telegraph machine, a carriage normally movable step-by-step in an advancing letter-spacing direction in conjunction with printing and word spacing operations of said machine, means for continuously moving said carriage in a reverse direction to an initial position

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in response to a first predetermined code group, means responsive to a second predetermined code group to condition said machine to effect movement of said carriage in said reverse direction a predetermined distance in response to following code groups of said first predetermined character, and means responsive to any one of a plurality of other code groups to restore said machine to normal whereby said carriage movement is effected in said normal manner.

3. In a printing telegraph machine, a carriage normally movable step-by-step in an advancing letter-spacing direction in conjunction with printing and word spacing operations of said machine and continuously in a reverse direction to an initial position in response to a first predetermined code group, a normally inoperative carriage back-spacing mechanism, means responsive to a second predetermined code group to condition said back-spacing mechanism for operation and means responsive thereafter to said first predetermined code group to operate said back-spacing mechanism to back-space said carriage a predetermined distance in conjunction with the receipt of each of said first predetermined code groups.

4. In a printing telegraph machine, a carriage normally movable step-by-step in an advancing letter-spacing direction in response to printing and word spacing code groups and continuously in a reverse direction from any point in its path of travel to an initial position in response to a carriage return code group, a normally unoperative auxiliary mechanism adapted to move said carriage in said reverse direction a predetermined distance on each operation, means operative on the receipt of a second predetermined code group for operatively conditioning said mechanism and means operative thereafter in response to said carriage return code groups to operate said mechanism.

5. In a printing telegraph machine, a carriage normally movable step-by-step in an advancing letter-spacing direction in response to printing and word spacing code groups and continuously from any point in its path of travel in a reverse direction to an initial position in response to a first predetermined code group, a normally unoperative back-spacing mechanism for moving said carriage in said reverse direction a predetermined distance on each operation thereof, signal controlled means for conditioning said back-spacing mechanism for operation and other signal controlled means effective after the operative conditioning of said mechanism to operate the same to back-space said carriage.

6. In a printing telegraph machine, a carriage normally movable step-by-step in an advancing letter-spacing direction in conjunction with printing and word spacing operations of said machine and continuously in a reverse direction to an initial position in response to a first predetermined code group, a normally unoperative back-spacing mechanism for moving said carriage in said reverse direction a predetermined distance on each operation thereof, signal controlled means for conditioning said back-spacing mechanism for operation, other signal controlled means effective after the operative conditioning of said mechanism to operate the same to back-space said carriage, and still other signal controlled means operative to restore said back-spacing mechanism to its normal condition.

7. In a telegraph recorder, a carriage movable

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in an advancing letter-spacing direction against the action of a resilient member tending to return said carriage to an initial position, a toothed ratchet wheel rotated during movement of said carriage, a ratchet pawl normally out of operative relation with said ratchet wheel, means responsive to a first code group to move said pawl into engagement with said ratchet wheel and thereby prevent rotation thereof and movement of said carriage in a reverse direction and other signal responsive means for operating said pawl to release said ratchet wheel for a predetermined part of a revolution whereby said resilient mem-

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ber is effective to move said carriage a corresponding distance in a carriage return direction.

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REFERENCES CITED

5 The following references are of record in the file of this patent:

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10	Number	Name	Date
	1,171,379	Wright	Feb. 8, 1916
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