

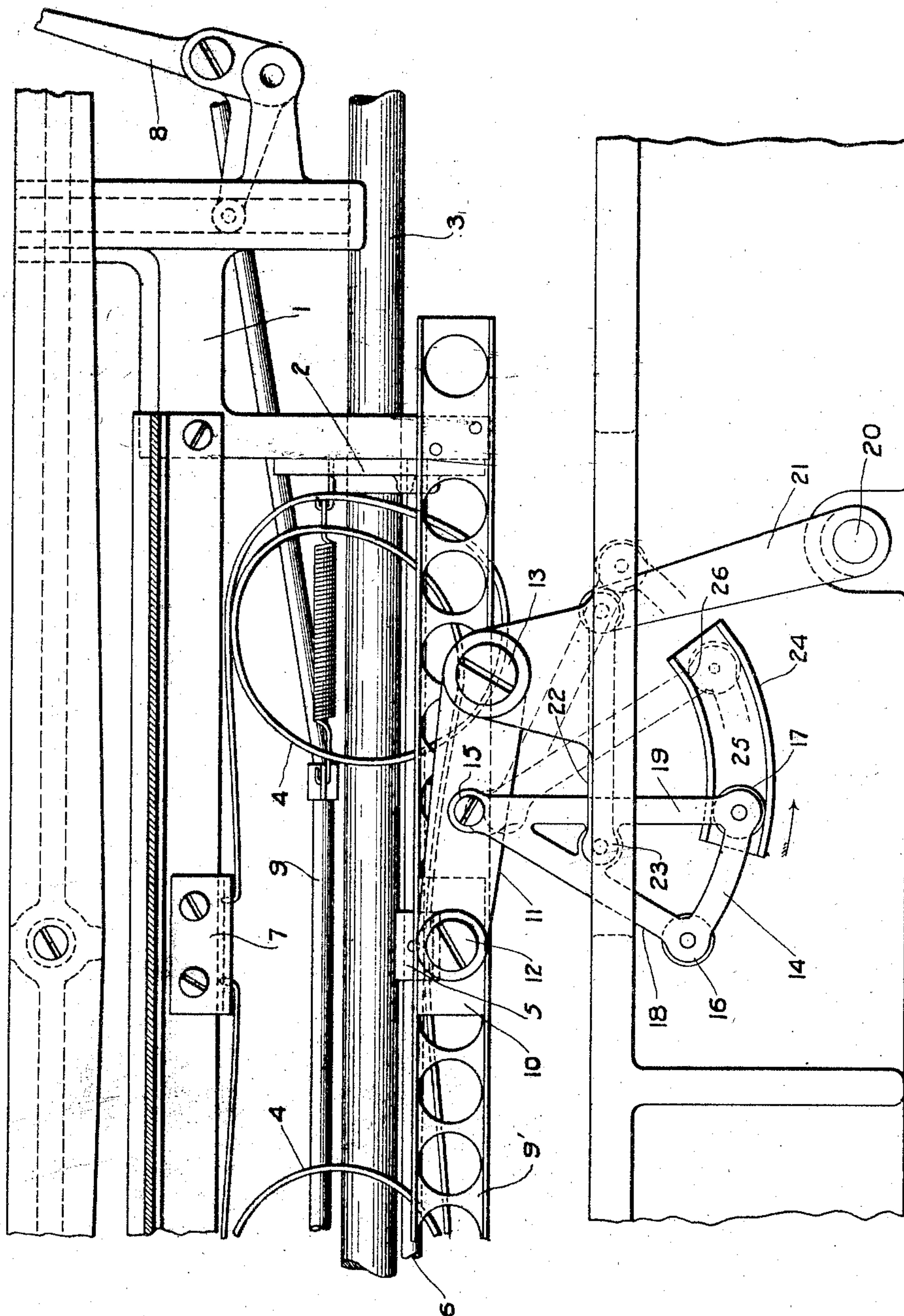
No. 883,753.

PATENTED APR. 7, 1908.

C. W. SPONSEL.

CARRIAGE SHIFTING MECHANISM FOR TYPE WRITERS.

APPLICATION FILED AUG. 18, 1905.



WITNESSES:

J. Clyde Rippey.
A. H. Wilson.

INVENTOR

INVENTOR
C. W. Sproule
BY
Warfield & Dool
ATTORNEYS

UNITED STATES PATENT OFFICE.

CHARLES W. SPONSEL, OF HARTFORD, CONNECTICUT, ASSIGNOR TO PARKER MACHINE COMPANY, OF BUFFALO, NEW YORK, A CORPORATION OF NEW YORK.

CARRIAGE-SHIFTING MECHANISM FOR TYPE-WRITERS.

No. 883,753.

Specification of Letters Patent.

Patented April 7, 1908.

Application filed August 18, 1905. Serial No. 274,651.

To all whom it may concern:

Be it known that I, CHARLES W. SPONSEL, residing at Hartford, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Carriage-Shifting Mechanism for Type-Writers, of which the following is a full, clear, and exact description, such as will enable others skilled in the art to which it ap-
10 pertains to make and use the same.

This invention relates to typewriters and the like, and, while the same is capable of employment in many different forms of machines it is especially adapted for use in connection with those known as "silent typewriters", and has for one of its objects the provision of mechanism whereby the machine will operate without noise.

Another object is to provide mechanism which will shift the carriage silently from initial position to other positions.

Other objects will be in part obvious and in part pointed out hereinafter.

The invention accordingly consists in the features of construction, combinations of elements and arrangement of parts which will be exemplified in the mechanism hereinafter described, and the scope of the application of which will be indicated in the following
25 claims.

The drawing represents an elevation, partly broken away, of one of the various possible embodiments of my invention.

As tending to render better understood certain of the various general features of my invention, it may here be noted that in typewriters having a small number of keys, wherein the printing characters are arranged in several groups, it is necessary to provide a shifting device for the carriage. I have
40 therefore found it desirable in silent typewriters to provide a device such that the carriage may be shifted silently from initial position to other positions in order to employ a printing character from any one of said groups.

The above and other advantages are secured in constructions of the nature of that hereinafter described.

Referring now to the drawing, the carriage 1 is mounted to reciprocate vertically in guides 2 positioned upon bar 3 carried in the frame of the machine. Spring 4 secured to bracket 5 positioned upon rod 6 extending
55 between the guides 2 is adapted to exert

a pressure on carriage 1 at 7 and thereby maintain the same in its upward position. The lever 8 is by means of rod 9 adapted to operate a pawl and ratchet mechanism, not shown, the same forming no essential part of my present invention, to allow the carriage to be shifted transversely of the machine. Channel bar 9' attached to carriage 1 has a sliding engagement with a block 10 positioned therein, and lever 11 is pivoted at 12 to said block and at 13 to a fixed portion of the frame of the machine. Movable lever 14 adapted to turn on pivot 15 positioned on lever 11 is provided with rollers 16 and 17 carried by arms 18 and 19 respectively of said lever 14. By reason of arm 19 being of greater length than arm 18, the roller 17 when the lever 14 is turned on its pivot describes a larger arc than roller 16 mounted upon arm 18, the purpose of which will be apparent hereinafter. Rock shaft 20 connected to the shift levers carries an arm 21 to which is pivoted a link 22, said link being also pivoted to lever 14 at 23. Cam 24 fixedly secured to the frame of the machine, is provided with a cam groove 25, said groove having therein a slight dwell 26 and is adapted to receive the rollers 16 and 17 of lever 14.

In the drawing, the carriage is shown in its upper or initial position, and in the operation of my invention which after the above description should be to a large extent obvious, when it is desired to shift the same from initial position, a rotation of rock shaft 20 by the proper shift lever will compel arm 21 and link 22 to swing lever 14 in the direction of the arrow and cause roller 17 to move in the cam groove 25 to the position shown in the dotted lines of the drawing, the extent of the movement thereof being determined by the dwell 26 in said cam groove 25 wherein said roller is adapted to rest. The carriage will, by this operation, be shifted in the guides 2 from initial position to a second position by reason of the channel bar 9 being connected through block 10 to lever 14 by means of lever 11 as above explained. In shifting the carriage from initial position or from the second position to a third position, a further rotation of the rock shaft 20 by another shift lever will cause the lever 14 to disengage roller 17 from said cam groove 25, and simultaneously engage therein roller 16 mounted on short arm 18 and move the same to the position shown in the dotted lines, the extent
110

of this movement being also determined by the engagement of roller 16 in dwell 26. The carriage is now in its third position, and when the pressure on either of the shift levers is removed, spring 4 will return the said carriage to its initial position. By reason of the carriage and the shifting devices being in constant engagement with each other, impact or concussion of moving parts is prevented.

In order to facilitate the movement of rollers 16 and 17 in cam 24 and also to reduce to a minimum the wear resulting from friction, I have found it desirable to harden the surfaces of cam groove 25, and I preferably employ hardened steel rollers in the relation shown, but it should be apparent that the rollers themselves may be omitted and pivotally mounted blocks substituted in their stead.

It may here be noted that, while I have mentioned the usual shift levers in the relation of actuating means for rock shaft 20, the same are not herein shown, as they, of themselves, comprise no essential part of my present invention. It will be apparent also, that while in the illustrative embodiment shown I have pivotally mounted lever 14, I can arrange the same in a fixed relation with respect to the carriage and pivotally mount cam 24 connecting the same with the shift levers, without departing in any way from the spirit of my invention and, obviously, a departure would not be effected by the provision of a carriage fixed against vertical reciprocation with the further provision of vertically reciprocating printing devices, the same comprising the type basket.

It will thus be seen that I have constructed a device characterized by simplicity and efficiency, wherein the objects of my invention are accomplished as the several parts operate to accomplish the shifting of the carriage without the disagreeable noise produced in machines of other types.

While I have shown my invention as applied to a machine of the above type, I do not, however, intend to limit its application exclusively to machines of such type, it being adapted as to many of its features to other forms of typewriters although primarily of great value in the relation herein shown.

As many changes could be made in the above construction and many apparently widely different embodiments of my invention could be made without departing from the scope thereof, I intend that all matter contained in the above description or shown in the accompanying drawings shall be interpreted as illustrative and not in a limiting sense.

Having described my invention, what I claim as new and desire to secure by Letters Patent is:—

1. In a typewriting machine, in combina-

tion, a carriage, a fixed cam, and means connected with the carriage and operating upon said cam adapted by a movement thereof relative to the carriage to shift said carriage from initial position to another position.

2. In a typewriting machine, in combination, a carriage, a fixed cam, means connected with the carriage and operating upon said cam adapted by a movement thereof relative to the carriage to shift the same from initial position to another position, and means for automatically determining such position.

3. In a typewriting machine, in combination, a carriage, a fixed cam, a swinging lever, pivotally connected at one end with said carriage, the other end being adapted to operate upon said cam, said lever being adapted by a movement thereof relative to said carriage to shift the same from initial position to another position, and means for determining such position.

4. In a typewriting machine, in combination, a carriage, a cam, means connected with the carriage and operating upon said cam, and means for causing a relative movement of said first-mentioned means with respect to the carriage and simultaneously therewith a movement thereof with the carriage, such movement being compelled by an operation upon said cam.

5. In a typewriting machine, in combination, a carriage, a fixed cam, means connected with the carriage and operating upon said cam, and means for causing a relative movement of said first-mentioned means with respect to the carriage and simultaneously therewith a movement thereof with said carriage, such movement being compelled by an operation upon said cam.

6. In a typewriting machine, in combination, a carriage, a fixed cam, a swinging lever pivotally connected at one end with the carriage, the other end of which is adapted to operate upon said fixed cam, means for causing a relative movement of said lever with respect to the carriage and simultaneously therewith and movement thereof with said carriage, such movement being compelled by an operation upon said cam.

7. In a typewriting machine, in combination, a carriage, a fixed cam, means connected with the carriage and operating upon said fixed cam adapted by a movement thereof relative to the carriage to shift the same from initial position to a second position, and other means connected with the carriage and operating upon said fixed cam adapted by a movement relative to said carriage to shift the same to a third position.

8. In a typewriting machine, in combination, a carriage, a fixed cam, means connected with the carriage and operating upon said fixed cam adapted by a movement thereof relative to said carriage to shift the same from initial position to a second position,

70

75

80

85

90

95

100

105

110

115

120

125

130

other means connected with the carriage operating upon said fixed cam adapted by a movement thereof relative to said carriage to shift the same to a third position, and means for determining the position of the carriage in both of its shifted positions.

9. In a typewriting machine, in combination, a carriage, a fixed cam, means connected with the carriage and operating upon said fixed cam, means for causing a relative movement of said first-mentioned means with respect to the carriage and simultaneously therewith a movement thereof with the carriage, such movement being compelled by an operation upon said cam, and other means connected with the carriage and operating upon said fixed cam adapted by a movement relative to the carriage and simultaneously therewith a movement with the same, such last-mentioned movement being also compelled by an operation upon said fixed cam.

10. In a typewriting machine, in combination, a carriage, a fixed cam, a swinging double-armed lever pivotally connected with the carriage, one arm of said lever being adapted to operate upon said cam, means for causing a relative movement of said lever with respect to said carriage and simultaneously therewith with said carriage, such movement being compelled by an operation upon said cam, said means being also adapted to move the other arm of said lever upon said cam relative to said carriage, such last-named movement being compelled by an operation upon said cam, and means for determining the extent of each of the movements of the arms of said lever.

11. In a typewriting machine, in combination, a carriage, sliding means positioned therein, fixed means provided with a cam groove, and means connected with the sliding means in the carriage and operating in said cam groove adapted to shift the carriage.

12. In a typewriting machine, in combination, a carriage, a fixed cam provided with a cam groove, said cam groove having a dwell therein, means sliding in said carriage, and means connected with said sliding means and operating in said groove adapted by a movement thereof to shift the carriage to one position, such position being determined by the dwell in said cam groove.

13. In a typewriting machine, in combination with the carriage, a channel-bar carried thereby, fixed means provided with a groove, means operating in said groove and connected with the channel-bar whereby a movement thereof will cause a movement of the channel-bar and thereby shift the carriage.

14. In a typewriting machine, in combination with the carriage, a channel-bar carried thereby, a fixed cam provided with a groove, and means operating in said groove and connected with the channel-bar whereby a movement thereof will cause a movement of the

channel-bar and thereby shift the carriage.

15. In a typewriting machine, in combination with the carriage, a channel-bar carried thereby, means adapted to slide in said channel-bar, means provided with a groove, means sliding in said groove and connected with the means in said channel-bar adapted to cause a movement of said channel-bar to shift the carriage.

16. In a typewriting machine, in combination with the carriage, a channel-bar carried thereby, means adapted to slide therein, fixed means provided with a groove, means operating in said groove and connected with the means in the channel-bar and adapted to cause a movement of said channel-bar to shift the carriage.

17. In a typewriting machine, in combination with the carriage, a channel-bar carried thereby, means positioned in said channel-bar and adapted to slide therein, fixed means provided with a cam groove, means operating therein, means adapted to cause a movement of said last-mentioned means in said cam groove, and a connection between the means in the cam groove and the means in the channel-bar whereby a movement of the former will cause a movement of the latter in said channel-bar and thereby shift the carriage.

18. In a typewriting machine, in combination with the carriage, a channel-bar, a fixed cam having a cam groove therein, means operating in said groove and means adapted to connect said last-mentioned means with the means in the channel-bar whereby a movement of the means in the cam groove will cause a movement of the channel-bar and thereby shift the carriage.

19. In a typewriting machine, in combination with the carriage, a channel-bar, means sliding therein, a fixed cam provided with a groove, a lever, means carried by the lever adapted to operate in said groove, a connection between said lever and the means in the channel-bar whereby a movement of the means in said groove will cause a movement of the channel-bar to shift the carriage.

20. In a typewriting machine, in combination with the carriage, a channel-bar carried thereby, means sliding in said channel-bar, a fixed cam provided with a groove, a lever, means carried by the lever adapted to operate in said groove, means for operating said lever, and a connection between said lever and the means in said channel-bar whereby a movement of the means in said groove will cause a movement of the channel-bar.

21. In a typewriting machine, in combination with the carriage, a channel-bar, means adapted to slide in said channel-bar, a lever pivoted to said means and also pivoted to a fixed part of the machine, a fixed cam provided with a cam groove, and movable means

operating in said groove and engaging said lever adapted to cause a movement of said channel-bar when the means in said cam groove is operated and thereby shift the carriage.

22. In a typewriting machine, in combination, a carriage, a channel-bar carried thereby, a block sliding in said channel-bar, a lever pivoted to said block and also pivoted to a fixed part of the machine, a fixed cam provided with a cam groove, a lever engaging the first mentioned lever, means on said last mentioned lever adapted to operate in said cam groove, and means for operating said last mentioned lever to cause a movement of the means in the channel-bar and thereby shift the carriage.

23. In a typewriting machine, in combination, a carriage, a channel-bar carried thereby, a block located in said channel-bar, a lever pivoted to said block also pivoted to a fixed part of the machine, a fixed cam provided with a cam groove, a member operating in said cam groove and engaging said lever adapted when moved in said groove to cause said lever to move the channel-bar and thereby shift the carriage, and means for moving said member.

24. In a typewriting machine, in combination with the carriage thereof, a fixed cam provided with a groove, said groove having a dwell therein, and a member operating in said groove and connected with the carriage adapted by a movement in said groove to shift the carriage, the position thereof being determined by the dwell in said groove.

25. In a typewriting machine, in combination with the carriage thereof, a fixed cam provided with a cam groove, said groove having a dwell therein, and a member operating in said groove and connected with the carriage and adapted by a movement in said cam groove to shift the carriage, the position of said carriage being determined by the dwell in said groove.

26. In a typewriting machine, in combination, a carriage, means provided with a groove, means connected to the carriage adapted to operate in said groove to shift the carriage to one position, and other means also connected to said carriage and operating in said groove and adapted to shift the carriage to another position.

27. In a typewriting machine, in combination, a carriage, a fixed cam provided with a cam groove, means connected with the carriage and adapted to operate in said cam groove to shift the carriage to one position, and other means also connected to said carriage and operating in said cam groove adapted to shift the carriage to a different position.

28. In a typewriting machine, in combination, a carriage, a fixed cam provided with a cam groove, interposed means connected with the carriage and operating in the cam

groove adapted by a movement thereof to shift the carriage to one position, and other means also operatively connected with the carriage and operating in said cam groove adapted by a movement thereof to shift the carriage to another position.

29. In a typewriting machine, in combination, a carriage, a channel-bar carried thereby, a block sliding in said channel-bar, means pivoted to said block and also pivoted to a fixed part of the machine, a cam provided with a cam groove, means connected with the first named means and operating in said cam groove and adapted to shift the carriage, and other means connected with said first named means adapted to operate in said cam groove to shift the carriage to another position.

30. In a typewriting machine, in combination, a carriage, a channel-bar carried thereby, a block adapted to slide in said channel-bar, a lever pivoted at one end to said block and at its opposite end to a fixed part of the machine, a fixed cam provided with a cam groove, a lever pivoted to the first mentioned lever and adapted to operate in the cam groove to shift the carriage to one position, and another lever also pivotally connected to said first mentioned lever and adapted to operate in said cam groove whereby the carriage may be shifted to a second position.

31. In a typewriting machine, in combination, a carriage, a channel-bar carried thereby, a block adapted to slide in said channel-bar, a lever pivoted at one end to said block and at the opposite end to a fixed part of the machine, a cam provided with a cam groove, a lever pivoted to the first named lever intermediate its ends and adapted to operate in the cam groove to shift the carriage to one position, and another lever also pivotally connected to first mentioned lever intermediate its ends and adapted to operate in said cam groove whereby the carriage is shifted to a second position.

32. In a typewriting machine, in combination, a carriage, a fixed cam provided with a cam groove, a double-armed lever connected to the carriage, means carried by one arm of said lever adapted to operate in said cam groove to shift the carriage to one position, means in the cam groove adapted to determine such position, and means carried by the other arm of said lever adapted also to operate in said cam groove to shift the carriage to another position.

33. In a typewriting machine, in combination, a carriage, a fixed cam provided with a cam groove, a double-armed lever connected to the carriage, means carried by one arm of said lever adapted to operate in said cam groove to shift the carriage to one position, means in the cam groove adapted to determine the position of said carriage after movement, and means carried by the other

arm of said lever and also operating in said cam groove to shift the carriage to another position, the means in said cam groove also operating to determine the position of the carriage after the last-mentioned movement.

34. In a typewriting machine, in combination, a carriage, means provided with a groove, said groove having a dwell therein, means connected with the carriage and operating in said groove adapted to shift the carriage to one position, such position being determined by said dwell, and other means also connected with the carriage and operating in said groove to shift said carriage to another position.

35. In a typewriting machine, in combination, a carriage, a fixed cam provided with a cam groove having a dwell therein, means connected with the carriage and operating in said cam groove adapted to shift the carriage to one position, such position being determined by said dwell, and other means also connected with the carriage and operating in said groove to shift the carriage to another position.

36. In a typewriting machine, in combination, a carriage, a fixed cam provided with a cam groove, said cam groove having a dwell therein, means connected with the carriage and operating in said cam groove adapted to shift the carriage to one position, such position being determined by said dwell, and other means also connected with the carriage and operating in said cam groove to shift the carriage to another position, said dwell also operating to determine the position of the carriage in said last shifted position.

37. In a typewriting machine, in combination, a carriage, a channel-bar secured thereto, means sliding in said channel bar, a lever pivoted to said means and also to a fixed part of the machine, a fixed cam provided with a cam groove, means connected with said lever and operating in said cam groove adapted by a movement thereof in said groove to shift the carriage to one position, said groove having a dwell therein adapted to determine the position of the carriage after movement, and other means also connected with said lever and operating in said cam groove to shift the carriage to another position, said dwell also operating to determine the position of the carriage upon the completion of the last-mentioned movement.

38. In a typewriting machine, in combination, a carriage, a channel bar secured thereto, a block adapted to slide in said channel bar, a lever pivoted to said block and also pivoted to a fixed part of the machine, a fixed cam provided with a cam groove, a

lever having arms of unequal length, means on one arm of said lever adapted to operate in said groove to shift the carriage from the initial position to a second position, and means carried by the shorter arm of said lever also operating in said cam groove to shift said carriage to a third position.

39. In a typewriting machine, in combination, a carriage, a channel bar secured thereto, means sliding in said channel bar, a lever connected with said means and also with a fixed part of the machine, a fixed cam provided with a cam groove, a lever pivoted to said first-mentioned lever and having arms of unequal length, means carried by the longer of said arms adapted to operate in said cam groove to swing the first-mentioned lever on its pivot and thereby shift the carriage from its initial position to a second position, and means carried by the shorter arm of said second-mentioned lever adapted to operate in said cam groove to effect a further swinging of said first-mentioned lever on its pivot to shift the carriage to a third position.

40. In a typewriting machine, in combination, a vertically reciprocated carriage, a channel bar secured thereto, a block adapted to slide in said channel bar, a lever pivoted to said block and also pivoted to a fixed part of the machine, a lever having arms of unequal length pivoted to said first-mentioned lever, fixed means provided with a cam groove, said cam groove having a dwell therein, means on the longer of said arms adapted to operate in said cam groove and through the medium of said first-mentioned lever and block to shift the carriage from the initial position to a second position, such second position being determined by the dwell in said cam groove, means on the shorter of said second-mentioned levers adapted to operate in said cam groove and operating through the medium of said first-mentioned lever and block to shift the carriage from the second position to a third position, such third position being also determined by the dwell in said cam groove, a rock shaft, an arm mounted upon said rock shaft, and a link pivoted to said arm and also pivoted to said second-mentioned lever, said link being adapted to cause a movement of said second-mentioned lever through the medium of said arm.

In testimony whereof I affix my signature in the presence of two witnesses.

C. W. SPONSEL.

Witnesses:

W. H. HONISS,
NELLIE PHOENIX.