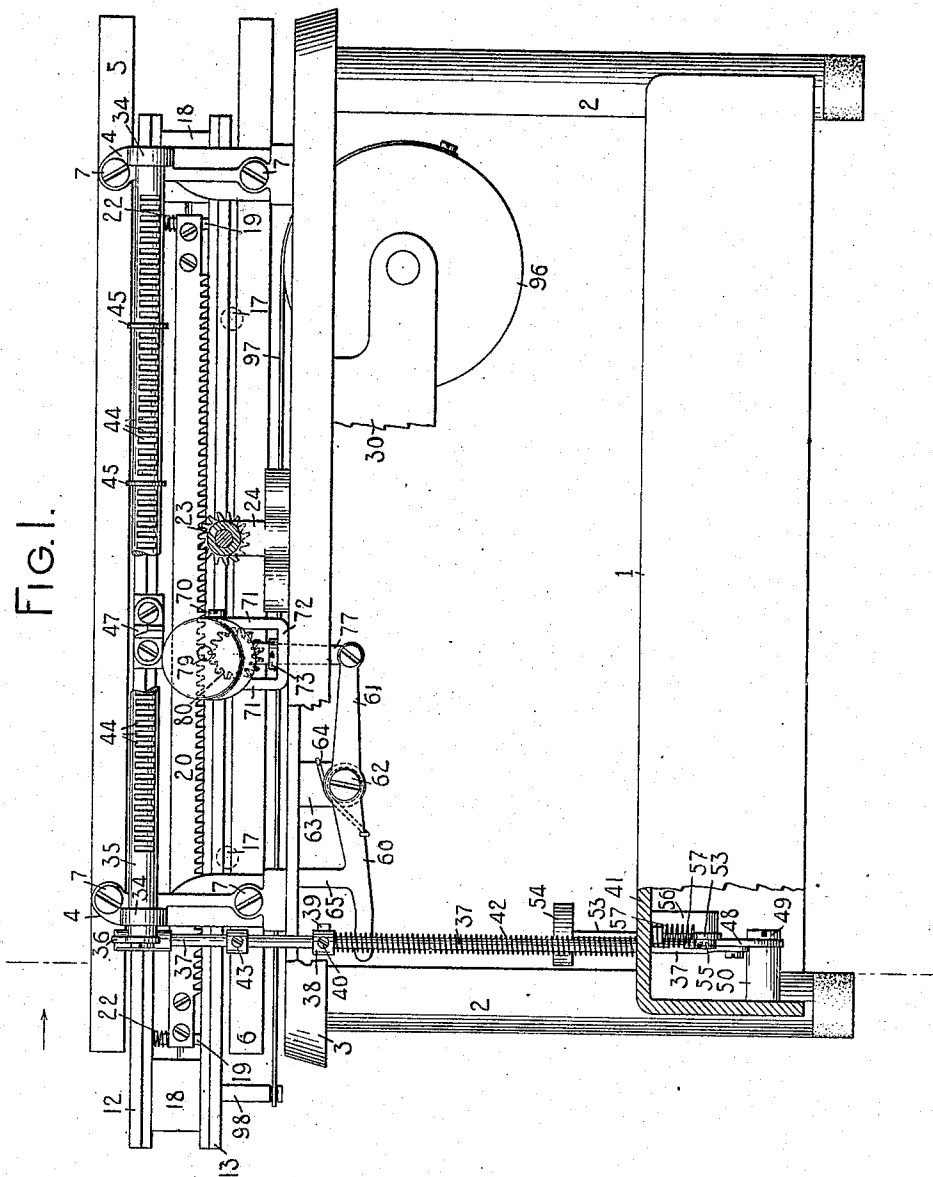


933,209.

3 SHEETS—SHEET 1.



E. M. Wells.
D. A. Carpenter.

Herbert H. Steele
By Jacob Filbel
HIS ATTORNEY

H. H. STEELE.
TYPE WRITING MACHINE.
APPLICATION FILED MAR. 28, 1906.

933,209.

Patented Sept. 7, 1909.
3 SHEETS—SHEET 2.

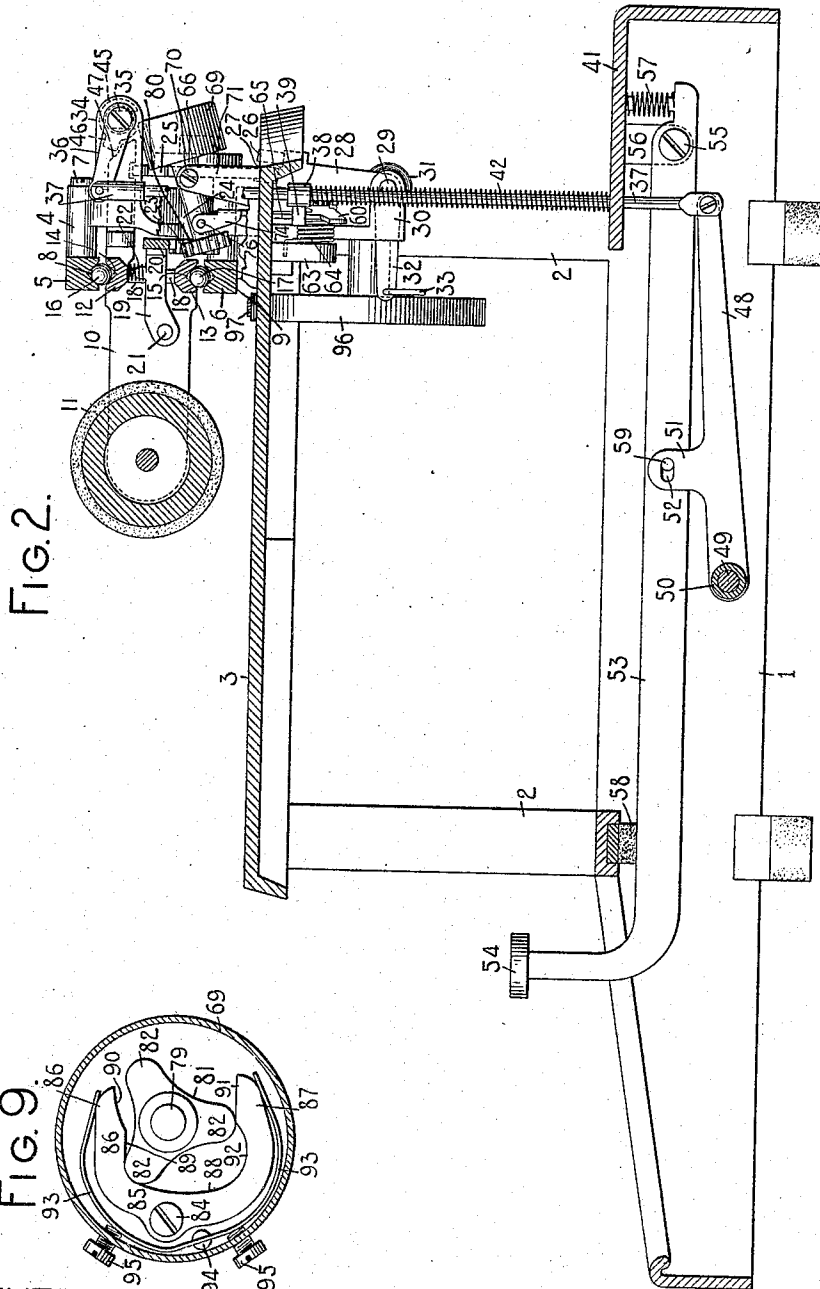


FIG. 2.

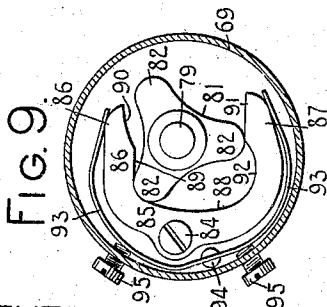


FIG. 9.

WITNESSES:

E. M. Wells
D. A. Carpenter.

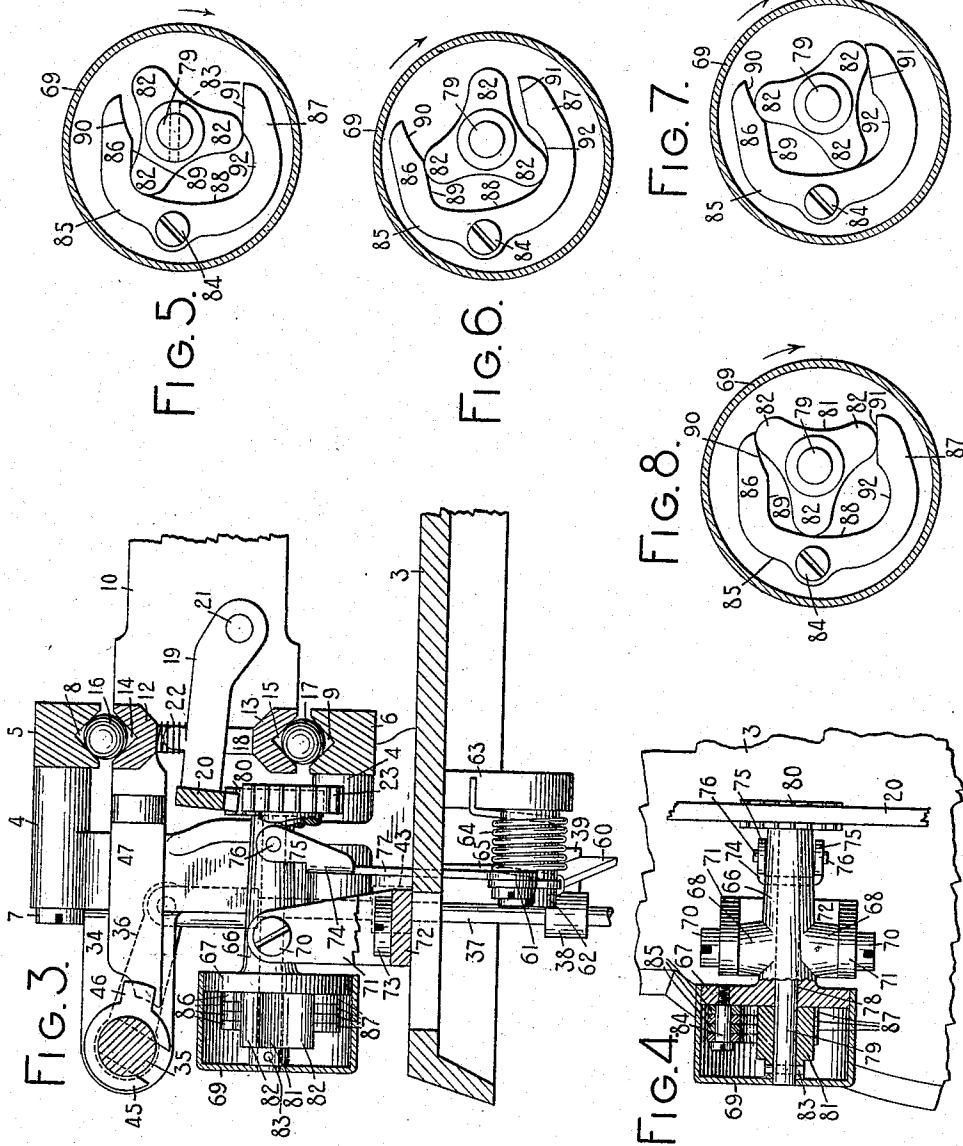
INVENTOR:

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H. H. STEELE.
TYPE WRITING MACHINE.
APPLICATION FILED MAR. 28, 1906.

933,209.

Patented Sept. 7, 1909.
3 SHEETS—SHEET 3.



WITNESSES:

E. M. Wells.
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UNITED STATES PATENT OFFICE.

HERBERT H. STEELE, OF SYRACUSE, NEW YORK, ASSIGNOR TO THE MONARCH TYPE-WRITER COMPANY, OF SYRACUSE, NEW YORK, A CORPORATION OF NEW YORK.

TYPE-WRITING MACHINE.

933,209.

Specification of Letters Patent.

Patented Sept. 7, 1909.

Application filed March 28, 1906. Serial No. 308,600.

To all whom it may concern:

Be it known that I, HERBERT H. STEELE, citizen of the United States, and resident of Syracuse, in the county of Onondaga and State of New York, have invented certain new and useful Improvements in Type-Writing Machines, of which the following is a specification.

This invention relates to improvements in carriage retarding devices for typewriting machines, and consists of the features of construction and combinations and arrangements of parts which are hereinafter described and specified in the claims.

In the accompanying drawings in which like reference numerals designate like parts in different views, Figure 1 is a rear and sectional elevation of the frame and parts of the mechanism of a Monarch typewriting machine to which carriage-retarding apparatus embodying the invention is applied; Fig. 2, a vertical section, on the plane indicated by the broken line near the left of Fig. 1, of said frame and parts of the mechanism of the machine, the sectional plane being seen from the right side of the machine; Fig. 3, an enlarged vertical section of the upper rear part of the machine, the section being at right angles to the axis of the platen, and the sectional plane being seen from the left side of the machine; Fig. 4, a plan of a fragment of the top plate and a sectional plan of parts of the carriage retarding mechanism; Figs. 5, 6, 7 and 8 are cross-sections of the case shown in Fig. 4 and end views of the mechanism contained in said case, illustrating the action of this mechanism; and Fig. 9, a cross-section of the case and an end view of mechanism similar to that shown in Figs. 3 *et seq.* to 8 inclusive, with the addition of a spring.

Although the drawings illustrate this invention applied to a Monarch machine, it is to be understood that it is also applicable to numerous other machines, including such as are called "under-stroke" machines, as well as "visible-writing" machines.

The carriage-retarding mechanism or apparatus in which the invention is embodied is attached to the top plate of the machine near its rear edge and on the right, preferably, of a vertical plane containing the axis

of the escapement pinion. The frame of the machine is composed of the base 1 and four posts 2, only three of which are shown, and the top plate 3. On the back part of the top plate are two standards 4, which are fastened to the top plate and to which upper and lower guide rails 5 and 6 are attached by screws 7, these guide rails having in them grooves 8 and 9 extending throughout the length of the rails. A carriage 10, in which is mounted a platen 11, has formed on it grooved guides 12 and 13, which extend from end to end of the carriage, the grooves 14 and 15 of these guides forming with the grooves 8 and 9 of the rails 5 and 6, ball or roller channels in which are shown anti-friction balls 16 and 17. The carriage is thus supported by the rails 5 and 6 and is movable on the balls in opposite directions over the top plate 3. The guides 12 and 13 are connected together by webs 18, and between these guides extend arms 19 which are pivoted to the ends of the carriage, and to whose rear ends are affixed the carriage rack 20 which is movable up and down on the pivots 21 of the arms 19. Springs 22, acting on the arms of the rack, tend to keep the rack in the position in which it is shown in Fig. 2, that being its normal position.

The rack 20 normally engages a pinion 23 which is fast on a shaft having a bearing in a bracket 24, affixed to the top plate 3, and on the rear end of this shaft is an escapement wheel 25, arranged to co-act with the feed dogs 26 and 27 (shown mainly in dotted lines in Fig. 2) which are mounted on a dog rocker 28, whose rock shaft 29 is pivoted at its ends between lugs on a bracket 30 affixed to and extending downward from the top plate 3. On the rock shaft 29 is a spring 31 which tends to keep the stepping dog 27 in engagement with the tooth of the escapement wheel 25. An arm 32, fast on the dog rocker, extends in front of the rock shaft 29, and to the front end of this arm is secured a link 33 which extends downward therefrom to the universal bar of the machine. Whenever the universal bar is actuated by depressing a character-key or the space-key, the front end of the arm 32 is drawn downward by the link 33, the stepping dog 27 is swung forward free from the escapement

wheel, and the holding dog 26 is moved into engagement with the escapement wheel, and when the universal bar rises after the key has been released, the stepping dog 27 re-engages with the escapement wheel and the carriage advances a letter-space distance. But if desired, a reverse-feed escapement may be used instead of that above described.

To the standards 4 are rigidly attached rearwardly extending arms 34, in which a stop bar 35 is journaled at its ends. On the right end of this stop-bar, outside of the adjacent bracket 34, is a crank arm 36 which normally extends forward and upward from the stop bar and to which is pivoted at its front end a rod or link 37, which extends downward from the crank-arm, through the top plate and into the base 1 of the machine. A collar 38, having on it a projection 39, is fastened by a screw 40 to the rod 37, and on the rod 37, between the collar 38 and the part 41 of the base, is a coiled spring 42 which presses upward against the collar, and on the rod 37 above the top plate 3 is a collar 43 which is fast on the rod. The collar 38 is so attached to the rod 37 that the projection 39 of the collar extends forward from the collar and rod. The stop bar 35 has cut in it on opposite sides slots or recesses 44 at letter space distances apart, and on this bar are tabulator stops 45 which fit in these recesses and which are adjustable on the bar, each tabulator stop being formed to engage a recess at the back of the bar and another at the front of the bar. Each tabulator stop has a lug 46 which extends forward and upward from the body of the stops secured to the stop bar, when the bar is in its normal position in which it is ordinarily held by the upward pressure of the spring 42 against the collar 38 on the rod 37. A stop 47, which is rigidly attached to the back of the carriage 10 about midway between the ends of the carriage, extends backward nearly to the stop bar 35, its rear end being out of alignment with the lugs 46 of the tabulator stops when the stop bar is in its normal position and then being movable by the carriage past the stops 45 and under the lugs 46.

The rod 37 is pivoted at its lower end to a lever 48, whose fulcrum is a screw 49 passing through its front end and into a boss 50 formed on the frame of the machine. On this lever is an upwardly extending ear 51 in which is a slot 52. A key lever 53, having on it a tabulator key 54, is pivoted at its rear end by a screw 55 to a lug 56 formed on the under side of the roof 41 of the base and extending downward therefrom, there being behind this lug a coil-spring 57 bearing against the key-lever and the part 41 of the base and tending to keep the key-lever in its normal position in contact with the pad 58 near its front end. A pin 59 fixed on the key-lever 53 extends through the slot 52 in

the ear 51 of the lever 48. The construction is such that when the key 54 is depressed the rear end of the lever 48 is forced downward and the link 37 rocks the bar 35, bringing the lugs 46 into the path of the stop 47.

A lever having arms 60—61 is pivoted by a shouldered screw 62 to a lug 63 on the under side of the top-plate 3, and on the screw 62 is a coil spring 64 which bears at one of its ends against the lug 63 and at its other end against the lower edge of the arm 60 of the lever, this arm of the lever extending in front of the rod 37 and under the projection 39 of the collar 38, and having on its upper edge a stop 65 which makes contact with the under side of the top-plate when the lever is in its normal position, where the spring 64 tends to keep it. A lever substantially the same as this has been used in the Monarch machine to actuate a rack-lifting device, operative to raise the carriage-rack out of engagement with the escapement-pinion, and thus to release the carriage from the control of the escapement. Since, however, a part of the carriage-retarding mechanism herein shown is operative through the lever 60—61 to lift the carriage rack from the pinion 23, the lifting device heretofore employed is not necessary in a machine provided with this carriage-retarding mechanism.

The retarding-mechanism comprises a rotary device and a coöperative device or set of devices, which are preferably constructed and arranged as they are shown herein, although it is apparent that for these particular devices modifications thereof might be adopted. The rotary device shown is arranged to be actuated by the carriage. A tubular shaft-carrier 66, on the rear end of which is a round plate 67 and on which are formed bosses 68, the plate 67 being the front end of a case 69, is pivoted by shouldered screws 70 to and between the sides 71 of a support whose base 72 rests on the top plate 3 and is attached thereto by a screw 73, the screws 70 extending into the bosses 68, and the shaft carrier and case being movable on the axis which coincides with the axes of the screws 70. A yoke 74 between whose branches 75 the shaft-carrier 66 extends is pivoted by pins 76 to the shaft-carrier, this yoke being on the upper end of a link 77 which extends through the top plate and is pivoted at its lower end to the arm 61 of the lever 60—61. The shaft-carrier 66 contains a round hole 78 in which is a shaft 79, the wall of this hole forming a bearing for the shaft, and on the front end of this shaft is a pinion 80 which is fast on the shaft. When the lever 60—61 is in its normal position the pinion 80 is below and out of engagement with the carriage rack 20 which then engages the escapement pinion 23, and the shaft carrier 66 is in the position shown in Fig. 2, this being its normal position. It

is movable from this position by the lever 60—61 acting on it through the link 77 and yoke 74 to the position shown in Fig. 3 and when it is thus moved, the pinion 80 engages
 5 with the carriage rack and lifts this rack out of engagement with the escapement pinion, so that the pinion 80 and shaft 79 may then be rotated by the action of the carriage-rack.

The rotary device is preferably a cam 81
 10 having three wings 82. This cam is fast on the shaft 79 within the case 69, the shaft extending through the cam, which fits loosely between the plate 67 and the back of the case and is fastened to the shaft by a
 15 pin 83. A set of oscillating devices, which are jointly coöperative with this rotary device, is shown pivotally mounted on a shouldered screw-pin 84 secured in and project-
 20 ing from the plate 67, these devices being within the case 69 and their pivotal axis being parallel to that of the shaft 79. Each of these devices is flat and is composed of a perforated part 85 through which the pin
 25 84 passes and on which are branches 86 and 87, the devices being arranged face to face as shown and being confined loosely between the head of the pin 84 and the plate 67. The branches or arms 86 and 87 extend on
 30 opposite sides of the axis of the rotary device and shaft 79, all of them passing through, or being cut transversely by, a plane which contains the axis of the shaft
 35 79, and which is at right angles to the plane containing that axis and the axis of the pin 84. The part 85 of each of these oscillating devices has the inner curved surface 88 fac-
 40 ing the cam 81, while each branch 86 has a substantially plane surface 89 and a curved surface 90, and each branch 87 has a sub-
 45 stantially plane surface 91 and a curved surface 92, the devices being so arranged with respect to the cam 81 that each wing of the cam, when the shaft 79 is turned around
 50 once, makes contact with all of the surfaces 88, 89, 90, 91 and 92, and that not less than two of the wings of the cam are ever in contact with the oscillating devices, and that
 55 sometimes all of the wings are in contact with those devices.

With each rotation of the cam, its motion
 60 being in the direction indicated by arrows near Figs. 5, 6, 7 and 8, the coöperative devices described are oscillated three times on the pin 84, they being moved to and fro by
 65 each wing 82 of the cam acting on the surfaces 89 and 91. The parts are shown in Fig. 5 as the arms 86 and 87 are about to be raised from their lowest positions by the action of a wing of the cam on the surfaces
 70 89. In Fig. 6 the arms 86 and 87 are shown in very nearly their highest positions. The wings of the cam act on the surfaces 91 to depress the arms 86 and 87 as appears by
 75 Figs. 7 and 8. It will be seen that in what-
 80 ever position the cam may be the arms 86

are close to or in contact with a wing of the cam and the arms 87 are close to or in contact with another wing of the cam, so that the oscillating devices are constantly sub-
 85 jected to the action of the cam, and constantly react on it, when the cam is in motion.

If the retarding effect produced on the cam by several coördinate oscillating devices, such as are shown in Figs. 3 and 4
 90 should be too great, one or more of the devices or units may be removed from the pin 84, and obviously more than four such devices might be arranged to co-act with a cam as do the oscillating devices herein
 95 shown and described. Moreover, the retarding effect of these devices, or of any number of such devices, may be increased by means of a spring 93, secured in a slotted
 100 post 94, and bearing on the arms 86 and 87 of the devices mounted on the pin 84 as appears by Fig. 9. The post 94 is fixed in the plate 67, and in the case 69 are set screws
 105 95 for regulating the pressure of the spring on the arms 86 and 87. The spring preferably so bears on the arms 86 and 87 that it
 110 will be forced to yield both when the arms are raised and when they are depressed by the cam.

The machine contains a spring drum 96
 115 which is connected by a strap 97 with a stud 98 affixed to and extending below the carriage, so that when the escapement is actuated, or the carriage rack is raised out of
 120 engagement with the pinion 23, the carriage will be moved toward the left by the action on it of the spring-drum and strap.

When the tabulator key 54 is depressed the
 125 stop bar 35 is turned on its axis by the action of the lever 53 on the lever 48 and of the latter lever and the rod 37 on the crank arm 36, the lugs 46 on the tabulator stops 45
 130 being moved downward into alinement with the stop 47 on the carriage. At the same time the projection 39 on the collar 38 affixed
 135 to the rod 37, forces downward the arm 60 of the lever 60—61 and the link 77 is raised by the arm 61 of this lever, so that the shaft carrier 66 is moved on its pivotal axis to the
 140 position in which it is shown in Fig. 9. The carriage rack then engages the pinion 80, and is out of engagement with the escape-
 145 ment pinion from which it has been raised by the action of the other pinion on the rack. The rod 37 is drawn downward until the collar 43 meets the top plate 3, and while this
 150 collar is held by pressure on the tabulator key in contact with the top plate, the lugs 46 on the stops 45 are kept in the path of the stop 47, and the shaft carrier 66 and the
 155 pinion 80 and the carriage rack are kept in the positions shown in Fig. 3. As soon as the rack 20 is thus disengaged from the escapement pinion, the carriage is drawn to-
 160 ward the left by the spring drum 96, and the

pinion 80, shaft 79 and cam 81 are turned together on the axis of the shaft by the action of the rack on the pinion 80. The carriage continues to travel and to so actuate the cam 81 until the stop 47 meets the lug 46 of one of the tabulator stops 45. Then the tabulator key is released, whereupon the key and stop bar are restored to their normal positions by the springs 57 and 42, and as the collar 38 on the rod 37 rises, the spring 64 restores the lever 60—61 to its normal position, the front end of the shaft carrier 66 and the pinion 80 being drawn downward by the link 77 to the positions shown in Fig. 2 and the carriage rack descends to the escapement pinion 23, with which it re-engages just before the tabulator stop leaves the stop 47.

When the cam 81 is actuated as described, the pivoted devices 85—86—87 are oscillated by the action of the wings of the cam on the branches 86 and 87, part of the energy of the carriage-spring being consumed both in moving the pivoted devices, or these devices combined with the spring 93, and in suddenly changing the direction of their motion. Consequently the carriage is retarded, and its speed may be regulated to the desired extent by increasing or diminishing the number of pivoted devices, or the pressure of the spring 93 on their arms 86 and 87. By means of the apparatus described the carriage may be so retarded, whatever distance it may travel free from the control of the escapement-mechanism, as to prevent the machine from being injured and to render the shock and noise slight when the carriage is arrested by tabulator-stops or other similar means.

It is to be understood that the invention claim herein may be embodied in mechanism differing in details of construction or arrangement of parts from that which has been specifically described above, and that it may be applied to machines containing denominational or decimal tabulating mechanism, instead of the particular tabulating mechanism shown herein, or other forms of column-spacing mechanism.

The words "carriage-retarding mechanism" or like expressions used in the claims, are to be understood as referring to devices having the general purpose of the carriage-retarding mechanism set forth in the present case, as distinguished from escapement devices for controlling the step-by-step feed of the carriage.

What I claim as new and desire to secure by Letters Patent, is:—

1. A typewriting machine provided with carriage-retarding mechanism comprising the combination of a rotary device, and a coöperative device movable to and fro by said rotary device, said coöperative device having surfaces between which said rotary device extends and with which it makes

contact and which are cut transversely by a plane containing the axis of said rotary device.

2. A typewriting machine provided with carriage-retarding mechanism comprising the combination of a rotary device having wings, and a coöperative device movable to and fro by the wings of said rotary device, said coöperative device having surfaces between which the rotary device extends and with which said wings make contact alternately and which are cut transversely by a plane containing the axis of said rotary device.

3. A typewriting machine provided with carriage-retarding mechanism comprising the combination of a rotary device, and a pivoted coöperative device adapted to be oscillated by said rotary device, said coöperative device having surfaces with which said rotary device makes contact and which are cut transversely by the plane which contains the axis of said rotary device and which is at right angles to the plane containing said axis and the pivotal axis of said coöperative device.

4. A typewriting machine provided with carriage-retarding mechanism comprising the combination of a rotary device having wings, and a pivoted coöperative device adapted to be oscillated by said rotary device, said coöperative device having surfaces with which said wings make contact alternately and which are cut transversely by the plane which contains the axis of said rotary device and which is at right angles to the plane containing said axis and the pivotal axis of said coöperative device.

5. A typewriting machine provided with carriage-retarding mechanism comprising the combination of a rotary device, and a spring-pressed coöperative device movable to and fro by said rotary device, said coöperative device having surfaces with which said rotary device makes contact and which are cut transversely by a plane containing the axis of said rotary device.

6. A typewriting machine provided with carriage-retarding mechanism comprising the combination of a rotary device, and a spring-pressed pivoted coöperative device adapted to be oscillated by said rotary device, said coöperative device having surfaces with which said rotary device makes contact and which are cut transversely by the plane which contains the axis of said rotary device and which is at right angles to the plane containing said axis and the pivotal axis of said coöperative device.

7. A typewriting machine provided with carriage-retarding mechanism comprising the combination of a rotary device arranged to be actuated by the carriage, and a pivoted coöperative device adapted to be oscillated by said rotary device, said coöpera-

tive device having surfaces with which said rotary device makes contact and which are cut transversely by the plane which contains the axis of said rotary device and which is at right angles to the plane containing said axis and the pivotal axis of said coöperative device.

8. A typewriting machine provided with carriage-retarding mechanism comprising the combination of a rotary device having three wings, and a coöperative device movable to and fro by the wings of said rotary device, said coöperative device having surfaces with which said wings make contact alternately and which are cut transversely by a plane containing the axis of said rotary device.

9. A typewriting machine provided with carriage-retarding mechanism comprising the combination of a rotary device having three wings, and a spring-pressed coöperative device movable to and fro by the wings of said rotary device, said coöperative device having surfaces with which said wings make contact alternately and which are cut transversely by a plane containing the axis of said rotary device.

10. A typewriting machine provided with carriage-retarding mechanism comprising the combination of a rotary device having three wings, and a pivoted coöperative device adapted to be oscillated by said rotary device, said coöperative device having surfaces with which said wings make contact alternately and which are cut transversely by the plane which contains the axis of said rotary device and which is at right angles to the plane containing said axis and the pivotal axis of said coöperative device.

11. A typewriting machine provided with carriage-retarding mechanism comprising the combination of a rotary device having three wings, and a spring-pressed pivoted coöperative device adapted to be oscillated by said rotary device, said coöperative device having surfaces with which said wings make contact alternately and which are cut transversely by the plane which contains the axis of said rotary device and which is at right angles to the plane containing said axis and the pivotal axis of said coöperative device.

12. A typewriting machine provided with carriage-retarding mechanism comprising the combination of a rotary device, a coöperative device movable to and fro by said rotary device, and a spring tending to keep said coöperative device in a position from which it is movable in opposite directions.

13. A typewriting machine provided with carriage-retarding mechanism comprising the combination of a rotary device, a pivoted coöperative device adapted to be oscillated by said rotary device, and a spring tending to keep said coöperative device in a position

from which it is movable in opposite directions.

14. A typewriting machine provided with carriage-retarding mechanism comprising the combination of a rotary device, and a set of devices having branches on which the rotary device acts, the devices of said set being arranged to be actuated together by said rotary device and one or more of them being separable from the rest of the mechanism for the purpose stated.

15. A typewriting machine provided with carriage-retarding mechanism comprising the combination of a rotary device, and a set of flat coördinate devices arranged face to face and adapted to be actuated by said rotary device, one or more of the devices of said set being separable from the rest of the mechanism for the purpose stated.

16. A typewriting machine provided with carriage-retarding means comprising the combination of a rotary device, and a set of devices movable to and fro by said rotary device, one or more of the devices of said set being separable from the rest of the mechanism for the purpose stated.

17. A typewriting machine provided with carriage-retarding means comprising the combination of a rotary device, and a set of pivoted devices arranged to be oscillated by said rotary device, one or more of said pivoted devices being separable from the rest of the mechanism for the purpose stated.

18. A typewriting machine provided with carriage-retarding means comprising the combination of a rotary device, and a set of spring-pressed devices movable to and fro by said rotary device, one or more of said spring-pressed devices being separable from the rest of the mechanism for the purpose stated.

19. A typewriting machine provided with carriage-retarding means comprising the combination of a rotary device, and a set of pivoted spring-pressed devices adapted to be oscillated by said rotary device, one or more of said pivoted devices being separable from the rest of the mechanism for the purpose stated.

20. A typewriting machine provided with carriage-retarding means comprising the combination of a shaft arranged to be rotated by the carriage, a cam connected with said shaft, and a device extending on opposite sides of the axis of the cam through a plane containing said axis, said device being movable to and fro by the cam.

21. A typewriting machine provided with carriage-retarding means comprising the combination of a shaft arranged to be rotated by the carriage, a cam connected with said shaft, and a set of devices extending on opposite sides of the axis of the cam and being movable to and fro by the cam.

22. A typewriting machine provided with

carriage-retarding means comprising the combination of a shaft arranged to be rotated by the carriage, a cam connected with said shaft, and a spring-pressed device extending on opposite sides of the axis of the cam and being movable to and fro by the cam.

23. A typewriting machine provided with carriage-retarding means comprising the combination of a shaft arranged to be rotated by the carriage, a cam connected with said shaft, and a set of spring-pressed devices extending on opposite sides of the axis of the cam and being movable to and fro by the cam.

24. A typewriting machine provided with carriage-retarding means comprising the combination of a shaft arranged to be rotated by the carriage, a cam connected with said shaft, and a pivoted device extending on opposite sides of the axis of the cam through a plane containing said axis, said pivoted device being adapted to be oscillated by the cam.

25. A typewriting machine provided with carriage-retarding means comprising the combination of a shaft arranged to be rotated by the carriage, a cam connected with said shaft, and a set of pivoted devices extending on opposite sides of the axis of the cam and adapted to be oscillated by the cam.

26. A typewriting machine provided with carriage-retarding means comprising the combination of a shaft arranged to be rotated by the carriage, a cam connected with said shaft, and a spring-pressed pivoted device extending on opposite sides of the axis of the cam and adapted to be oscillated by the cam.

27. A typewriting machine provided with carriage-retarding means comprising the combination of a shaft arranged to be rotated by the carriage, a cam connected with said shaft, and a set of spring-pressed pivoted devices extending on opposite sides of the axis of the cam and adapted to be oscillated by the cam.

28. A typewriting machine provided with carriage-retarding means comprising the combination of a case, a shaft extending into said case and arranged to be rotated by the carriage, a cam connected with said shaft, and a device pivoted to the case and adapted to be oscillated by the cam, said device and cam being within the case.

29. A typewriting machine provided with carriage-retarding means comprising the combination of a case, a shaft extending into said case and arranged to be rotated by the carriage, a cam connected with said shaft, a device pivoted to the case and adapted to be oscillated by the cam, and a spring bearing on said device, the cam and said device and spring being within the case.

30. A typewriting machine provided with carriage-retarding means comprising the combination of a case, a shaft extending into said case and arranged to be rotated by the carriage, a cam connected with said shaft, and a set of devices pivoted to the case and adapted to be oscillated by the cam, said devices and cam being within the case.

31. A typewriting machine provided with carriage-retarding means comprising the combination of a case, a shaft extending into said case and arranged to be rotated by the carriage, a cam connected with said shaft, and a set of spring-pressed devices pivoted to the case and adapted to be oscillated by the cam, said devices and cam being within the case.

32. A typewriting machine provided with carriage-retarding means comprising the combination of a rotary device, means operative to connect said device with the carriage, and a spring-pressed cooperative device having parts between which said rotary device extends and on which the rotary device is operative alternately to move said other device to and fro.

33. A typewriting machine provided with carriage-retarding means comprising the combination of a rotary device, and a set of cooperative devices having parts between which said rotary device extends and on which the rotary device is operative to move said other devices to and fro, one or more of the devices of said set being separable from the rest of the mechanism for the purpose stated.

34. A typewriting machine provided with carriage-retarding means comprising the combination of a rotary device, and a set of spring-pressed cooperative devices having parts between which said rotary device extends and on which the rotary device is operative to move said other devices to and fro, one or more of the devices of said set being separable from the rest of the mechanism for the purpose stated.

35. A typewriting machine provided with carriage-retarding means comprising the combination of a rotary device, and a pivoted spring-pressed cooperative device having parts between which said rotary device extends and on which the rotary device is operative alternately to oscillate said other device.

36. A typewriting machine provided with carriage-retarding means comprising the combination of a rotary device, and a set of pivoted cooperative devices having parts between which said rotary device extends and on which the rotary device is operative to oscillate said other devices.

37. A typewriting machine provided with carriage-retarding means comprising the combination of a rotary device, and a set of

spring-pressed pivoted coöperative devices having parts between which said rotary device extends and on which the rotary device is operative to oscillate said other devices.

5 38. A typewriting machine provided with carriage-retarding means comprising the combination of a case, a shaft extending into said case and arranged to be rotated by the carriage, a rotary device connected with said shaft, and a device pivoted to the case and having parts between which said rotary device extends and on which the rotary device is operative alternately to oscillate said pivoted device, said rotary and pivoted devices
10 being within the case.

39. A typewriting machine provided with carriage-retarding means comprising the combination of a case, a shaft extending into said case and arranged to be rotated by the carriage, a rotary device connected with said shaft, and a set of devices pivoted to the case and having parts between which said rotary device extends and on which the rotary device is operative to oscillate said pivoted devices, said rotary and pivoted devices being within the case.

40. A typewriting machine provided with carriage-retarding means comprising the combination of a case, a shaft extending into said case and arranged to be rotated by the carriage, a rotary device connected with said shaft, and a set of devices pivoted to the case and each having parts between which said rotary device extends and on which the rotary device is operative alternately to oscillate the pivoted device, said rotary and pivoted devices being within the case.

41. A typewriting machine provided with carriage-retarding means comprising the combination of a case, a shaft extending into said case and arranged to be rotated by the carriage, a rotary device connected with said shaft, and a spring-pressed device pivoted to the case and having parts between which said rotary device extends and on which the rotary device is operative alternately to oscillate said pivoted device, said rotary and pivoted devices being within the case.

42. A typewriting machine provided with carriage-retarding means comprising the combination of a case, a shaft extending into said case and arranged to be rotated by the carriage, a rotary device connected with said shaft, and a set of devices pivoted to the case on a common axis and having parts between which said rotary device extends and on which the rotary device is operative to oscillate said pivoted devices, said rotary and pivoted devices being within the case.

43. A typewriting machine provided with carriage-retarding means comprising the combination of a case, a shaft extending into said case and arranged to be rotated by the carriage, a rotary device connected with said

shaft, and a set of devices pivoted to the case on a common axis and each having parts between which said rotary device extends and on which the rotary device is operative alternately to oscillate the pivoted device, said rotary and pivoted devices being within the case.

44. A typewriting machine provided with carriage-retarding means comprising the combination of a case, a shaft extending into said case and arranged to be rotated by the carriage, a rotary device connected with said shaft, and a set of spring-pressed devices pivoted to the case on a common axis and having parts between which said rotary device extends and on which the rotary device is operative to oscillate said pivoted devices, said rotary and pivoted devices being within the case.

45. A typewriting machine provided with carriage-retarding means comprising the combination of a case, a shaft extending into said case and arranged to be rotated by the carriage, a rotary device connected with said shaft, and a set of spring-pressed devices pivoted to the case on a common axis and each having parts between which said rotary device extends and on which the rotary device is operative alternately to oscillate the pivoted device, said rotary and pivoted devices being within the case.

46. A typewriting machine provided with carriage-retarding mechanism comprising the combination of a rotary device, and coöperative means consisting of a set of separable units each movable to and fro by said rotary device.

47. A typewriting machine provided with carriage-retarding mechanism comprising the combination of a device arranged to be actuated by the carriage, and coöperative means consisting of a set of separable units each movable to and fro by said device.

48. A typewriting machine provided with carriage-retarding mechanism comprising the combination of a rotary device, and coöperative means consisting of a set of separable units pivoted on a common axis and adapted to be oscillated by said device.

49. A typewriting machine provided with carriage-retarding mechanism comprising the combination of a device arranged to be actuated by the carriage, and coöperative means consisting of a set of separable units pivoted on a common axis and adapted to be oscillated by said device.

50. A typewriting machine provided with carriage-retarding mechanism comprising the combination of a device arranged to be actuated by the carriage, and coöperative means consisting of a set of separable spring pressed units all movable together by said device.

51. A typewriting machine provided with

carriage-retarding mechanism comprising the combination of a device arranged to be actuated by the carriage, and coöperative means consisting of a set of separable spring-pressed units mounted on a common pivotal axis and adapted to be oscillated together by said device.

Signed at Syracuse, in the county of Onondaga, and State of New York, this 26th day of March A. D. 1906.

HERBERT H. STEELE.

Witnesses:

H. A. AUMENT,
W. J. LOGAN.