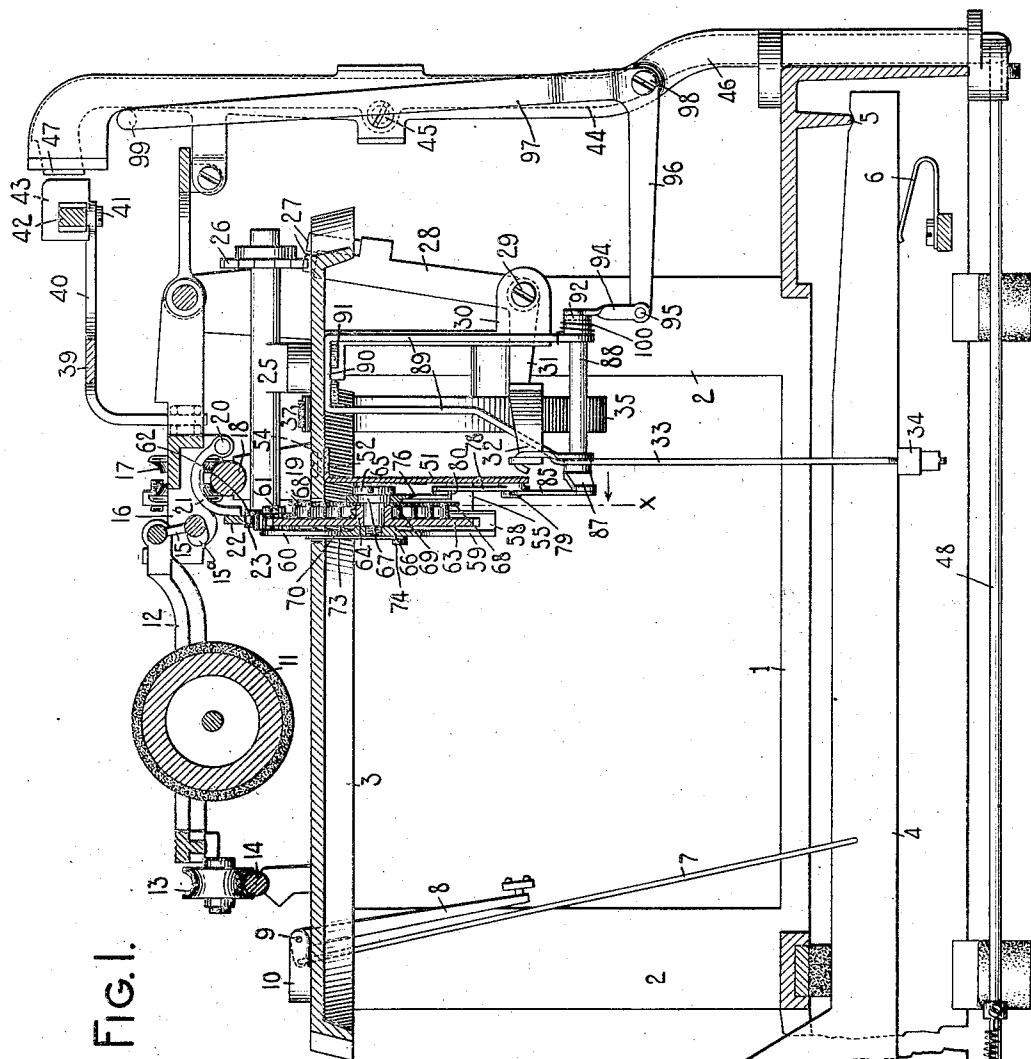
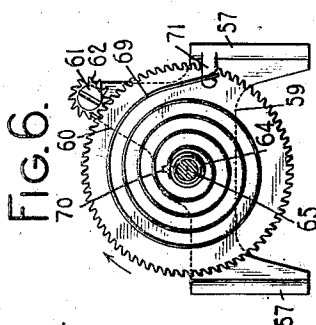


940,765.

3 SHEETS—SHEET 1.



16



666

WITNESSES:

E. M. Wells
New York

INVENTOR:

Herbert R. White

By *Jacob Zebul*
HIS ATTORNEY

H. R. WHITE.
TYPE WRITING MACHINE.
APPLICATION FILED MAY 14, 1906.

Patented Nov. 23, 1909.
3 SHEETS—SHEET 2.

940,765.

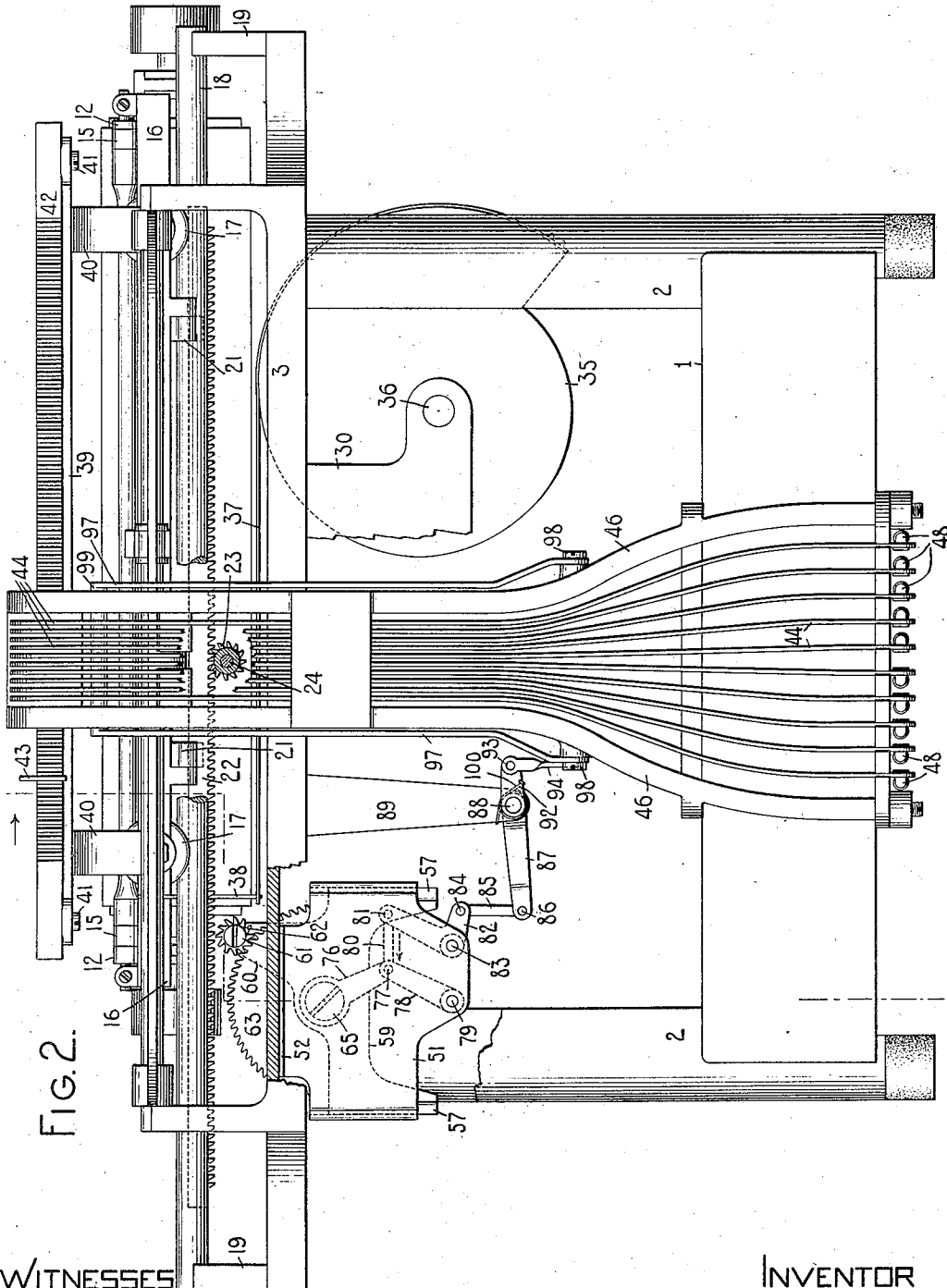


FIG. 2.

WITNESSES

E. M. Wells.
Wm. Pool

INVENTOR

Herbert R. White

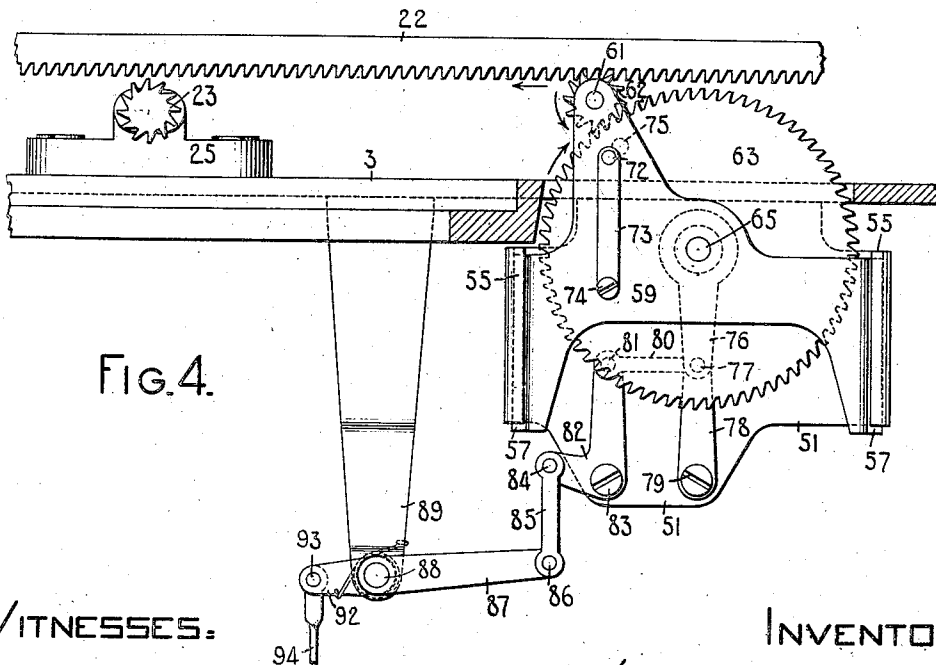
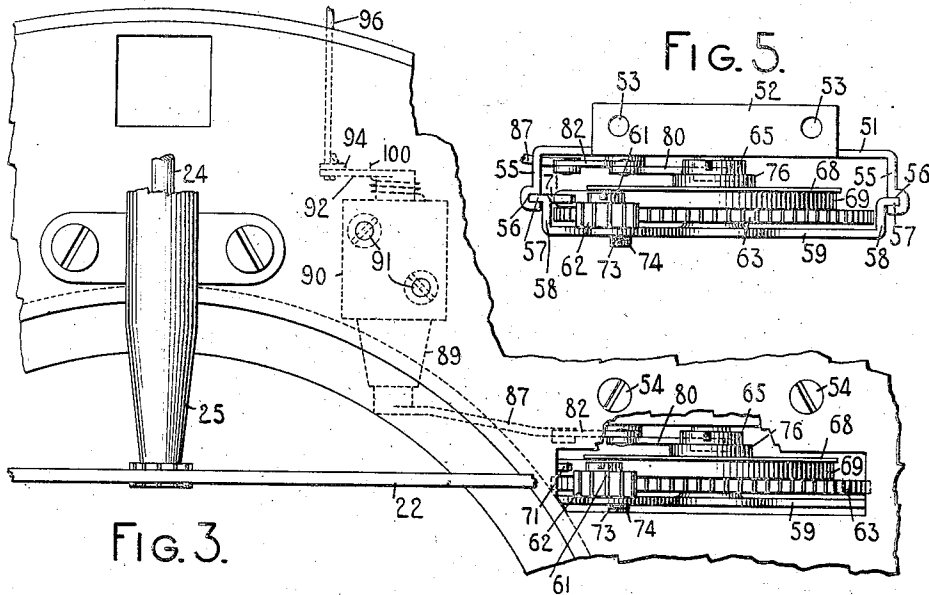
By Jacob F. Fabel.

HIS ATTORNEY

H. R. WHITE.
TYPE WRITING MACHINE.
APPLICATION FILED MAY 14, 1908.

940,765.

Patented Nov. 23, 1909.
3 SHEETS—SHEET 3.



WITNESSES:

E. M. Wells
m. w. Pool

INVENTOR:

Herbert R. White

By Jacob F. F. F.

HIS ATTORNEY

UNITED STATES PATENT OFFICE.

HERBERT R. WHITE, OF LOWELL, MASSACHUSETTS, ASSIGNOR TO WYCKOFF, SEAMANS & BENEDICT, OF ILION, NEW YORK, A CORPORATION OF NEW YORK.

TYPE-WRITING MACHINE.

940,765.

Specification of Letters Patent.

Patented Nov. 23, 1909.

Application filed May 14, 1906. Serial No. 316,724.

To all whom it may concern:

Be it known that I, HERBERT R. WHITE, a citizen of the United States, and resident of Lowell, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Type-Writing Machines, of which the following is a specification.

My invention relates to carriage retarding devices for typewriting machines and has for its principal object to provide an improved apparatus of the class specified.

To the above and other ends the invention consists in the features of construction, combinations of devices and arrangements of parts hereinafter fully described and particularly pointed out in the claims.

One form of my invention is shown in the accompanying drawings, wherein—

Figure 1 is a vertical front to rear sectional view of a typewriting machine embodying my invention, parts of the machine being omitted and parts being broken away. Fig. 2 is a rear elevation of the machine, parts being omitted and parts being broken away. Fig. 3 is a full sized fragmentary top plan view of the right-hand rear part of the machine. Fig. 4 is a front elevation of the parts shown in Fig. 3, the top plate being shown in section. Fig. 5 is a full sized detached top plan view of my improved retarding apparatus, the actuating devices therefor being omitted. Fig. 6 is a vertical sectional view of parts of the retarding apparatus, the view being taken on a plane represented by the line $x-x$ in Fig. 1 and looking in the direction of the arrow at said line.

I have shown my invention as applied to a No. 6 Remington typewriter but it is to be understood that said invention may be adapted to other forms of writing machines.

In the drawings, the main frame of the machine is shown as comprising a base 1, corner posts 2 and a top plate 3. Key levers 4 are fulcrumed at 5 in the rear of the base, each key lever being provided with a restoring spring 6. Connected by a link 7 with each key lever is a type bar 8, said type bar being pivoted at 9 in one of a series of hangers 10 secured on the top plate of the machine. When the key levers are properly actuated their associate type bars cooperate with the under side of a rotary platen 11,

said platen being journaled in a platen frame or carrier 12 having at its front side a roller 13 cooperative with a shiftable track-way 14. The platen carrier is connected by arms 15 and a rock shaft 15^a with a carriage truck 16, said carriage truck carrying rollers 17 which cooperate with a fixed rail or track 18 supported on standards 19 rising from the top plate. The platen carrier and carriage truck constitute a carriage or traveling element.

Pivoted to the carriage truck at 20 are arms 21 curving forwardly and downwardly over the rail 18 and supporting at their free ends a feed rack 22, said feed rack normally meshing with a feed pinion 23 which is fixed in a shaft 24 journaled in a supporting bracket 25 fixed to the top plate. Loosely mounted on the rear end portion of the shaft 24 and operatively connected with the pinion 23 is a toothed escapement wheel 26 and cooperative with said escapement wheel are escapement dogs 27 mounted at the top of the vertically disposed arm 28 of a vibratory dog carrier or rocker pivoted at 29 in a bracket 30 depending from the top plate, the dog rocker having a forwardly extending arm 31 to which is fixed a yoke 32, said yoke having slotted ends with which engage depending hooked arms 33, said arms carrying at their lower ends a universal bar 34. The universal bar extends from side to side of the machine beneath the key levers 4 and the spacing levers (not shown) and is adapted to be operated when the key levers or spacing levers are actuated. The operation of the universal bar causes the escapement dogs 27 and escapement wheel 26 to cooperate in a known manner to permit the carriage to be drawn a letter space distance at a time in printing direction under the influence of a carriage spring drum 35 pivoted at 36 in the bracket 30 and connected by a band or strap 37 with an arm 38 fixed to and depending from the carriage truck.

I have illustrated my invention in connection with one style of the well-known Gorin tabulator which, as it forms no part of the invention, need be but briefly described, it being understood that said invention is equally applicable to other constructions of tabulating mechanism. A supporting frame comprising a cross bar 39 and arms 40 is suitably secured at the rear of the carriage

truck, the arms 40 of said frame having horizontal and rearwardly projecting extensions to which are secured by screws 41 a toothed stop bar 42 which receives one or more column stops 43, said column stops being adjustable longitudinally of said bar to determine columnar fields, as is well understood. A set of denomination stop members or levers 44 are pivoted at 45 in a supporting frame or bracket 46 which is suitably secured at the rear of the machine frame. The upper arms of the levers 44 are provided with forwardly extending stop portions 47 which are arranged side by side a letter space distance apart. The lower ends of the levers 44 are loosely connected to the rear ends of forwardly extending push rods 48, said push rods bearing at the front of the machine in a detachable bearing bracket 49. Each push rod is provided with a key or finger piece 50 and a restoring spring 50^a and when actuated is adapted to move the stop portion 47 of its associate lever 44 forwardly until said stop portion is in the path of the column stop or stops 43.

In the present instance I have preferred to dispense with the construction of carriage releasing mechanism commonly employed with the style of tabulating mechanism now under consideration, and to effect the release of the carriage, after the coöperative tabulating stops have been properly positioned, by my retarder itself, said retarder serving both to effect the release of the carriage and to retard the speed thereof after such release. It is to be understood, however, that from certain aspects of my invention it is immaterial whether the retarder itself effects the release of the carriage as presently to be described or whether the carriage is released by other and separate means, such, for example, as the means usually employed in the style of tabulating mechanism illustrated.

My improved retarding apparatus is preferably guided and supported in a bracket which is best shown in Figs. 1, 2, 4 and 5, said bracket comprising a depending body portion 51 having at its upper end a rearwardly bent lip 52 formed with openings 53 which receive headed screws 54, said screws entering the top plate from the top thereof and serving to secure the bracket fixedly to the frame of the machine. The body portion of the bracket (see especially Fig. 5) is provided with forwardly extending flanges 55, said flanges being formed with oppositely disposed grooved guide ways 56, which guide ways coöperate with laterally disposed lips or flanges 57 projecting outwardly from the rear ends of the side portions 58 of a plate-like supporting member 59, said supporting member being slidable up and down in the guide ways 56 and carrying the retarding devices proper.

As best seen in Fig. 4, the plate-like supporting member 59 is provided at its left side with an upwardly projecting portion 60 which receives a shouldered screw 61, said shouldered screw serving as a pivot for a pinion 62, the pinion being adapted to mesh with the carriage feed rack 22 but being normally separated therefrom as shown in Figs. 1 and 2. Constantly meshing with the pinion 62 is a toothed wheel or rotary device 63, said wheel being provided with a hub 64 (Fig. 1) which receives a shouldered screw 65, said shouldered screw having a threaded portion which engages in a threaded opening in a boss 66 formed near the middle of the slidable member 59 and projecting rearwardly from the rear face thereof. As shown in Fig. 1, the hub of the toothed wheel 63 is confined between the face of the boss 66 and an enlarged portion 67 of the shouldered screw 65. The rear end portion of the hub 64 is slightly reduced and receives a guard member 68. Confined between the front face of the guard member and the rear face of the toothed wheel 63 is a spiral spring 69, said spring, as best shown in Fig. 6, having its inner end secured to a pin 70 projecting from the hub of the toothed wheel and its outer end connected to a hooked lug 71 projecting inwardly from one of the lips 57 of the supporting plate 59. The spring tends constantly to turn the toothed wheel 63 on the shouldered screw 65 as a pivot in the direction of the arrow in Fig. 6.

In order to prevent the rotary device or wheel 63 from being turned by the spring 69 from normal position, I provide stop devices, one of said devices comprising a pin 72 fixed at the upper end of a flat spring 73, said spring, as best shown in Fig. 4, being secured against the front face of the supporting member 59 by a screw 74. The spring pin 72 protrudes rearwardly through an opening in the body of the supporting member 59 and into the path of the other stop member which is in the form of a lug or pin 75 projecting forwardly from the front face of the wheel 63 near its periphery. The spiral spring 69 tends to maintain the stops 72 and 75 in engagement, and when said stops engage, further rotary movement of said wheel in the direction of the arrow in Fig. 6 is prevented. If it is desired to increase or decrease the initial tension of the spring 69 the stop 72 may be drawn forwardly out of the path of the stop 75 by pulling the upper end portion of the spring 73 forwardly away from the face of the plate-like supporting member 59, and thereafter the wheel 63 may be turned one or more turns in either direction as may be desired without interference from the stop 72. After the tension has been altered to the desired extent the end or stop 72 is permitted

ted to return to normal position to again co-operate with the stop or pin 75.

Referring now to the means for reciprocating the member 59 and the parts thereon up and down in the guide ways 56, said means comprises a toggle, the upper arm 76 whereof, as shown in Fig. 1, is pivoted on an enlarged portion 67 of the shouldered screw 65, said arm being confined between the head of the screw and the guard plate 68. The upper arm 76 of the toggle is pivotally connected by a pivot pin 77 with the lower arm 78 thereof, said lower arm being pivoted on a shouldered screw 79 secured to the supporting bracket 51 as best appears in Figs. 2 and 4. The toggle is adapted to be straightened and broken by suitable mechanism such as that shown and now to be described. Pivoted to the pin 77 between the arms of the toggle, as shown in Figs. 1, 2 and 4, is a link 80, said link being pivotally connected at 81 with the vertically disposed arm of a bell-crank lever 82 pivoted at 83 to the bracket 51. The shorter horizontally disposed arm of the bell crank projects inwardly toward the middle of the machine and is pivotally connected at 84 to a link 85, which link in turn is pivoted at 86 to a crank arm 87 fixed to the forward end of a rock shaft 88, said rock shaft being journaled in the lower ends of the depending arms 89 of a U-shaped bracket, the cross bar or connecting portion 90 whereof is fixed to the under side of the top plate by headed screws 91. The rear end portion of the rock shaft 88 has fixed to it a short crank arm 92 projecting oppositely from the crank arm 87. The crank arm 92 is pivotally connected at 93 with a vertically disposed link 94, said link being pivotally connected at 95 with a horizontally disposed arm 96 projecting forwardly from the lower end of the right hand arm (considered from the front of the machine) of a U-shaped releasing bail. The releasing bail comprises side arms 97 pivoted at 98 to the opposite sides of the tabulator bracket 46, said side arms 98 being connected at their upper ends by a cross bar or rod 99 which cross bar, as will be understood from an inspection of Figs. 1 and 2, extends from side to side of the denomination levers 44 near the upper ends thereof and in a position to be operated by said levers when they are actuated to position their associate stop portions 47. A light coiled restoring spring 100 surrounds the rock shaft 88 behind the rear bracket arm, one end of said spring being secured to the bracket arm 89 and the other end to the crank arm 92. Said spring tends to break the toggle joint in the manner presently to be described.

Referring now to the operation of the retarding apparatus, the movable parts of it are normally in the relation shown in all the figures save Fig. 4. When a tabulating key

50 is actuated, the upper arm of the associate denomination stop member 44 is swung forwardly about the pivot 45, said arm in its movement actuating the release bar 99, swinging the latter forwardly about the pivots 98 and depressing the arm 96, said arm through the link 94 turning the rock shaft 88 and the latter through the crank arm 87 and link 85 operating the bell crank lever 82. The bell crank lever through the link 80 tends to straighten the toggle, the arms whereof are normally at an angle as shown in Fig. 2. The lower arm of the toggle has a fixed pivot 79 so that as the toggle is gradually straightened it serves to slide the supporting member 59 upward in its fixed track ways and to bring the pinion 62 into mesh with the carriage feed rack 22. As the upward movement of the member 59 continues thereafter the carriage feed rack is gradually swung upward about its pivots 20 until it is separated from the feed pinion 23, thereby releasing the carriage from the control of the other step-by-step feeding devices. The parts are so proportioned that when the release of the carriage is effected the projected denomination stop portion 47 will be in the proper position to coöperate with the nearest column stop 43 to the right, so that the carriage will move in letter space direction under the influence of the carriage power or spring drum 35 until said carriage is arrested by the coöperation of the projected denomination stop and the column stop.

When the carriage is released from the step-by-step feeding devices as described, the parts of the retarding device, which it will be noted has served to effect said carriage release, will be in the positions illustrated in Fig. 4. From an inspection of this figure it will be understood that as the carriage moves toward the left after having been released, the pinion 62 will be turned by the carriage rack 22 in the direction of the arrow *b* in said figure and the toothed wheel 63 will be turned by the pinion 62 in the direction of the arrow *c* in said figure. It will be clear, from what has been said of the construction of the parts, that the turning of the toothed wheel 63 in the direction of the arrow *c* will wind up the spiral spring 69 increasing the tension thereof and consequently increasing the resistance which said spring applies to the carriage through its connections therewith. It will be apparent that during the run of the carriage the resistance applied to it through the spring 69 is a continuously increasing one and furthermore that said resistance varies with the distance through which the carriage runs, the greater the extent of the run the greater being the resistance. The result is that, as the momentum of the carriage increases, the resistance applied thereto by the retarding

devices also increases. It is, of course, to be understood that the pulling force exerted by the carriage power or spring drum 44 is greater than the pulling force exerted by the spring 69 of the retarding device. The relation between the forces of the two springs is so regulated that the speed of the carriage during its runs will be reduced to such an extent that when it is arrested by the impact of the cooperating tabulating stops 43 and 47, said impact will be much less than it would be if my invention were not employed and the harmful effects of a too severe impact will be consequently avoided.

From an inspection of Fig. 4 it will furthermore be apparent that when the retarding devices are in operative position the toggle will be practically straightened and the weight of the support 59 and the parts carried thereby will be supported by the pivot screw 79 and the pressure due to said weight will not be transmitted to the actuated tabulator key 50 to add to the touch of the latter, or the power necessary to maintain it depressed.

When the actuated tabulator key is released the parts of the tabulating mechanism are restored to normal position in the usual manner. The light coiled spring 100 serves through its connections with the link 80 to draw the latter inward or toward the left in Fig. 4, the force of said spring being sufficient to break the toggle joint. As soon as the toggle joint is broken, the support 59 and the parts thereon will be restored to normal position through the gravity of said support 59, and the associate parts acting through the connections on the release bail (comprising the side arms 97 and the cross bar 99) will restore the latter to normal position as shown in Fig. 1.

Various changes may be made without departing from the spirit of my invention.

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

1. In a typewriting machine, the combination with a power driven carriage and step-by-step feeding devices therefor, of a retarding apparatus normally disconnected from the carriage and arranged to be connected with the carriage to release it from said step-by-step feeding devices and to exert thereafter on said carriage, while the latter is being drawn in printing direction by the carriage power, a resistance which increases continuously during the run of the carriage whatever the distance through which the carriage travels.

2. In a typewriting machine, the combination with a power driven carriage and step-by-step feeding devices therefor, of a retarding apparatus normally disconnected from the carriage and arranged to be connected with the carriage to release it from its step-by-step feeding mechanism, said

retarding apparatus comprising a spring which is operative to exert on said carriage, after the latter has been released from its step-by-step feeding mechanism and while it is being drawn in printing direction by the carriage power, a resistance which increases continuously until the arrest of the carriage and which acts until said apparatus is disengaged from the carriage.

3. In a typewriting machine, the combination with a power driven carriage and step-by-step feeding devices therefor, of a retarding apparatus normally disconnected from the carriage and arranged to be connected with the carriage to effect the release of said carriage from its step-by-step feeding mechanism, said retarding apparatus comprising a rotary device, a spring connected with said device, and a rotary connecting member arranged to be actuated by the carriage and to rotate said device while the carriage is released from its step-by-step feeding mechanism and is being drawn in printing direction by the carriage power, said spring being operative, during the rotation of said device, to exert a resistance on the carriage varying with the extent of the free run of the latter and which acts until said apparatus is disengaged from the carriage.

4. In a typewriting machine, the combination with a power driven carriage and step-by-step feeding mechanism therefor including a feed rack connected to the carriage, of a retarding apparatus normally disconnected from the carriage and arranged to be connected with the carriage to disconnect the feed rack from the other parts of the step-by-step feeding mechanism, said retarding apparatus comprising a spring controlled device arranged to be rotated by the feed rack and operative, while the carriage feed rack is disconnected and the carriage is being drawn in printing direction by the carriage power, to exert on said carriage a continuously increasing resistance and which acts until said apparatus is disengaged from the carriage.

5. In a typewriting machine, the combination with a power driven carriage and step-by-step feeding devices therefor, of a retarding apparatus normally disconnected from the carriage and arranged to be connected with the carriage to release it from the step-by-step feeding device, said retarding apparatus comprising a spring which is operative to exert on said carriage, after the latter has been released from its step-by-step feeding devices and while it is being drawn in printing direction by the carriage power, a resistance which increases continuously during the run of the carriage, said retarding device also including means for varying the initial or normal tension of said spring.

6. In a typewriting machine, the combination with a power driven carriage and step-by-step feeding devices therefor, of a retarding apparatus comprising a rotary spring controlled device bodily movable into and out of operative connection with the carriage and operative to exert on the carriage, while the latter is released from its step-by-step feeding devices and is being drawn by the carriage power in printing direction, a continuously increasing resistance, said spring controlled device acting until said retarding apparatus is disengaged from the carriage.

7. In a typewriting machine, the combination with a power driven carriage and step-by-step feeding devices therefor, of a retarding apparatus comprising a rotary spring controlled device bodily movable into and out of operative connection with the carriage and operative to exert on the carriage, while the latter is released from its step-by-step feeding devices and is being drawn by the carriage power in printing direction, a continuously increasing resistance, said retarding apparatus also including means for regulating the initial spring tension of said spring pressed device.

8. In a typewriting machine, the combination with a power driven carriage and step-by-step feeding devices therefor, of a retarding apparatus comprising a slidable key actuated member, and a rotary spring controlled device pivoted on said member, said device being normally disconnected from the carriage and being movable to be connected with the carriage when the latter is released from its step-by-step feeding devices.

9. In a typewriting machine, the combination with a power driven carriage and step-by-step feeding devices therefor, of a retarding apparatus comprising a key actuated plate slidable in fixed guide ways, a rotary spring controlled device pivoted on said plate and movable therewith into and out of connection with the carriage, said plate operating to exert on the carriage a continuously increasing resistance when said carriage is released from its step-by-step feeding devices and is being propelled by the carriage power.

10. In a typewriting machine, the combination with a power driven carriage and step-by-step feeding devices therefor, of a retarding apparatus comprising a key actuated slidable supporting member, a spring controlled toothed wheel pivoted on said member, and a pinion also pivoted on said member and operative on said toothed wheel, said pinion being movable with said member into and out of operative connection with the carriage.

11. In a typewriting machine, the combination with a power driven carriage and

step-by-step feeding mechanism therefor including a rack operatively connected with the carriage, of a carriage retarding apparatus comprising a key actuated plate-like support slidable in fixed guide ways, a spring controlled toothed wheel pivoted on said support, and a pinion also pivoted on said support and connected with said toothed wheel, said support being movable at will into and out of position to connect said pinion with said rack.

12. In a typewriting machine, the combination with a power driven carriage and step-by-step feeding mechanism therefor including a feed rack pivotally connected with said carriage, of a retarding apparatus comprising a key actuated plate-like support slidable in fixed guide ways, a spring controlled toothed wheel pivoted on said support, and a pinion also pivoted on said support and continuously connected with said toothed wheel, said support being movable at will into and out of position to connect said pinion with said rack, said pinion being operative to swing said feed rack on its pivots to release the carriage from the control of the other parts of the step-by-step feeding mechanism.

13. In a typewriting machine, the combination with a power driven carriage and step-by-step feeding devices therefor, of a retarding apparatus comprising a rotary device, a support on which said device is pivoted, a spring constantly tending to turn said rotary device in one direction, and stops normally maintained in contact by said spring and adapted to be separated to permit the initial tension of said spring to be varied.

14. In a typewriting machine, the combination with a power driven carriage and step-by-step feeding devices therefor, of a retarding apparatus comprising a rotary device, a support therefor, a spiral spring having one end connected with said rotary device and the other end with said support, and stops, one on said rotary device and one on its support, said stops normally cooperating to maintain said rotary device in normal position, one of said stops being movable to enable the rotary device to be turned to vary the initial tension of said spring.

15. In a typewriting machine, the combination with a power driven carriage, of a retarding apparatus comprising a slidable support, retarding devices mounted on said support, a key, and operative connections between said key and said support, said connections including a toggle.

16. In a typewriting machine, the combination with a power driven carriage, of a retarding apparatus comprising a slidable support, retarding devices mounted on said support, a key, and operative connections between said key and said support, said con-

nections including a toggle, said toggle being normally broken and being adapted to be straightened to operatively connect the retarding devices with the carriage.

5 17. In a typewriting machine, the combination with a power driven carriage, of a retarding apparatus comprising a support adapted to be vertically reciprocated, retarding devices on said support, a key, and
10 operative connections between said key and said support, said connections including a toggle, the construction being such that when the toggle is straightened pressure due to the weight of the retarding devices
15 and the support on which they are mounted is removed from the key.

18. In a typewriting machine, the combination with a power driven carriage, of retarding apparatus including a movable
20 support, retarding devices mounted on said support, and means including a key and a toggle, operative to move said support from its normal position and to connect said retarding devices with the carriage.

25 19. In a typewriting machine, the combination with a power driven carriage and step-by-step feeding mechanism including a feed rack pivoted on the carriage and a pinion meshing therewith normally, of re-
30 tarding apparatus including a movable support, retarding devices mounted on said support, and means including a key and a toggle, operative to move said support from its normal position and to connect said re-

tarding devices with the carriage and swing 35 said rack out of mesh with said pinion.

20. In a typewriting machine, the combination with a power driven carriage, step-by-step feeding devices therefor, and key actuated tabulator stop members, of a re- 40 tarding apparatus comprising a slidable support, retarding devices mounted on said support, and operative connections between said tabulator stop members and said support, said connections including a toggle. 45

21. In a typewriting machine, the combination with a power driven carriage, step-by-step feeding mechanism including disconnectible devices operative to release the carriage, tabulating mechanism including a 50 plurality of key actuated tabulator stop members and a bar operative by said stop members, of a retarding apparatus normally disconnected from the carriage and including a slidable support carrying the retard- 55 ing devices proper, said support being connected with said bar and movable thereby to connect the retarding devices proper with the carriage and to disconnect the disconnectible devices of the step-by-step feeding 60 mechanism.

Signed at Lowell in the county of Middlesex, and State of Massachusetts, this eleventh day of May A. D. 1906.

HERBERT R. WHITE.

Witnesses:

H. B. HOYLE,
MILO INGALLS.