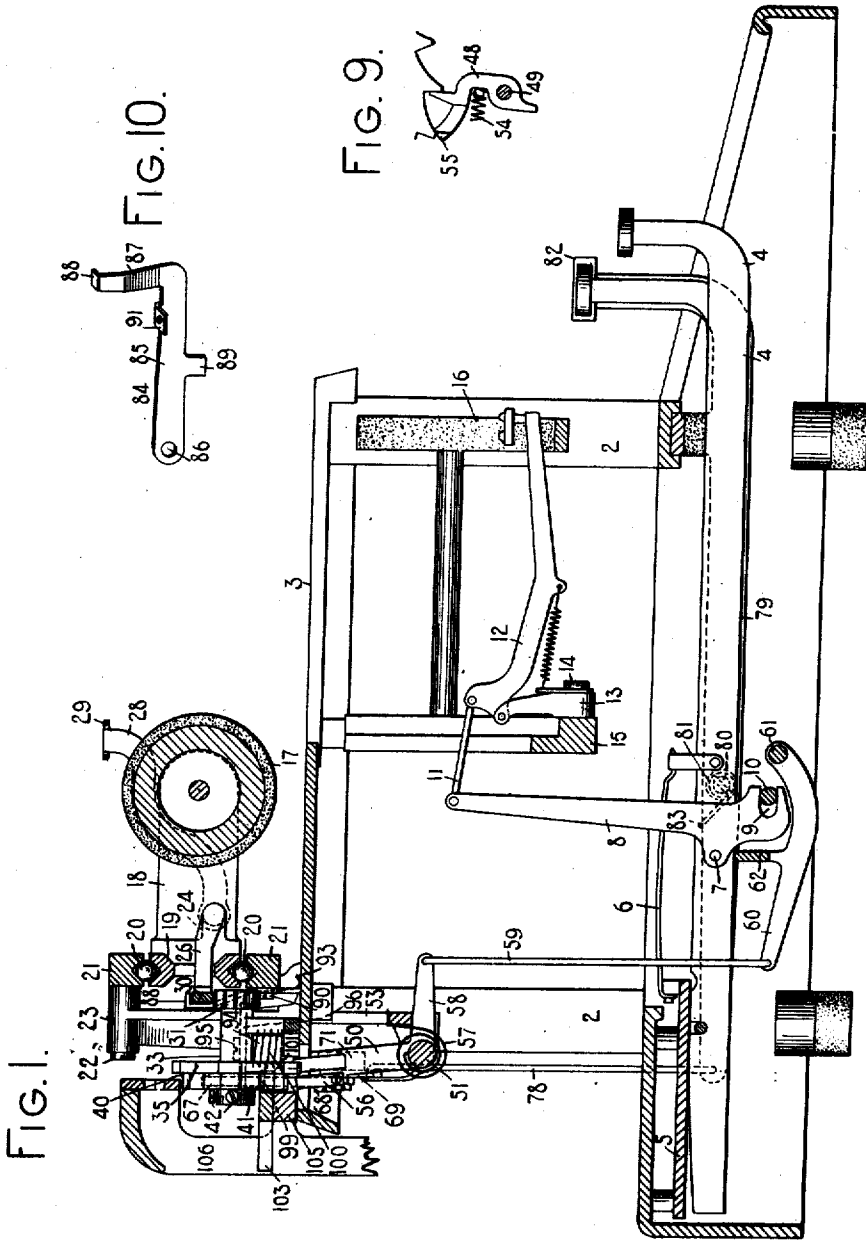


904,233.

G. A. SEIB.
TYPE WRITING MACHINE.
APPLICATION FILED MAY 8, 1908.

Patented Nov. 17, 1908.
8 SHEETS—SHEET 1.

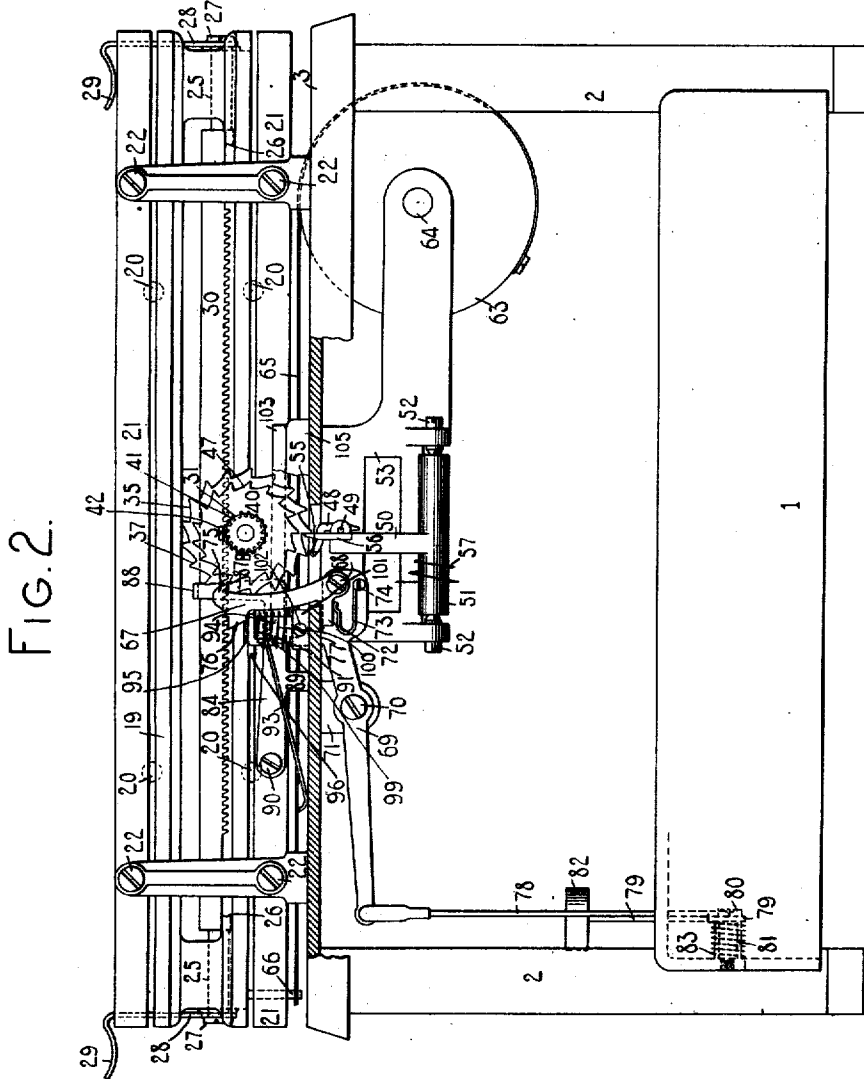


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904,233.

Patented Nov. 17, 1908.
 3 SHEETS—SHEET 2.



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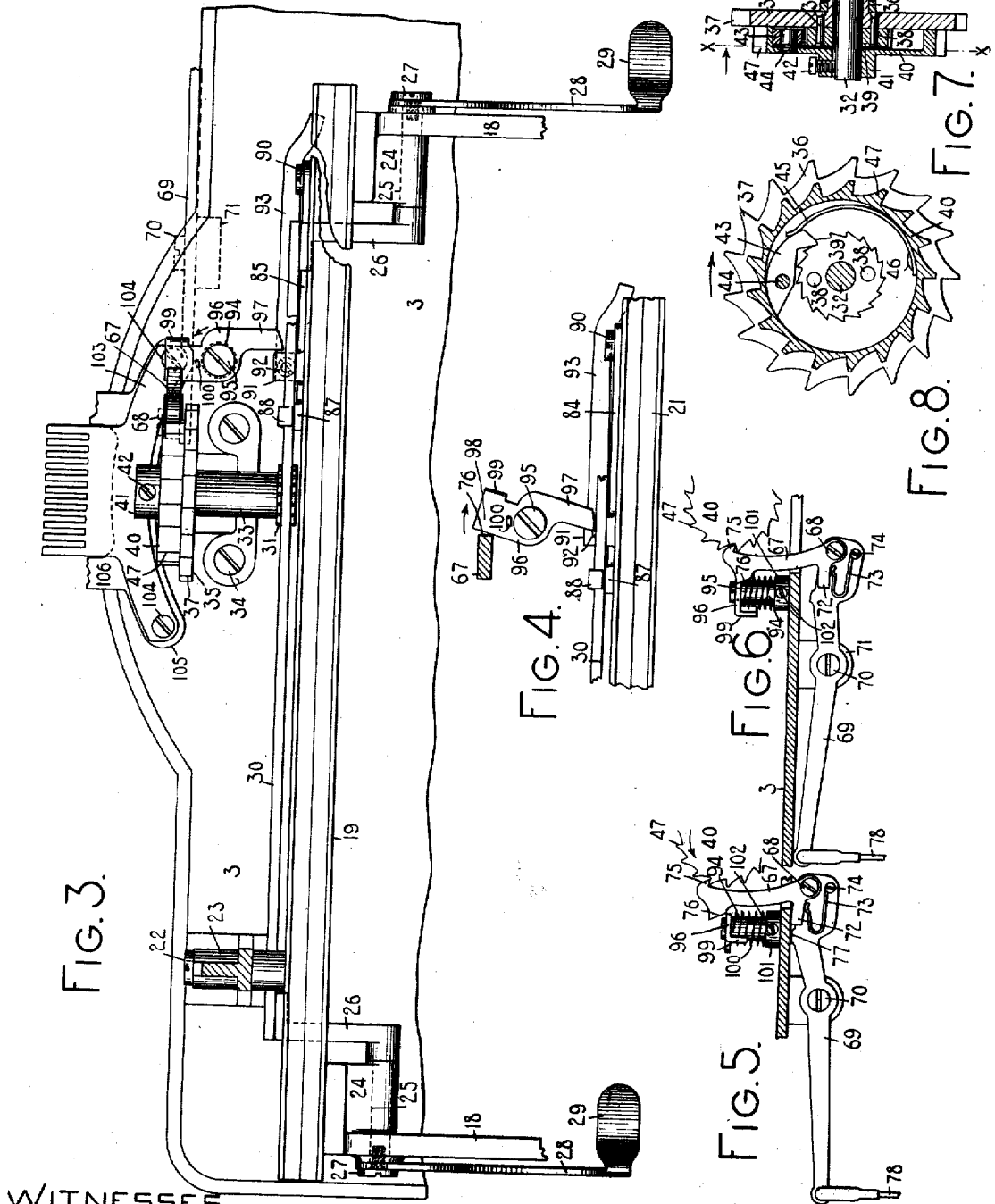
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3 SHEETS—SHEET 3.



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UNITED STATES PATENT OFFICE.

GEORGE A. SEIB, OF SYRACUSE, NEW YORK, ASSIGNOR TO THE MONARCH TYPEWRITER COMPANY, OF SYRACUSE, NEW YORK, A CORPORATION OF NEW YORK.

TYPE-WRITING MACHINE.

No. 904,233.

Specification of Letters Patent.

Patented Nov. 17, 1908.

Application filed May 8, 1906. Serial No. 315,851.

To all whom it may concern:

Be it known that I, GEORGE A. SEIB, 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.

My invention relates more especially to that form of carriage feeding mechanism for typewriting machines which is separably or detachably connected with the carriage or traveling element. In such constructions it sometimes happens, as for example when the carriage is being back spaced or moved in reverse direction a letter space distance at a time, that the carriage is moved so quickly that its momentum overcomes the tension of the spring or springs which are usually employed to maintain the carriage operatively connected with its letter space feeding mechanism and in consequence the parts of the detachable connection separate or jump out of engagement and thus permit the carriage to move more than the desired distance.

The main object of the invention, generally stated, is to prevent the separation of the carriage from its step-by-step feeding mechanism when such separation is not desired.

In the form of the invention shown in the accompanying drawings the separable connection between the carriage and its step-by-step feeding mechanism comprises a feed rack mounted on the carriage and a feed pinion mounted on the frame of the machine, said rack and pinion normally meshing but being adapted to be separated to release or free the carriage. The rack and pinion are maintained in mesh by spring pressure. Fixedly connected with the pinion in the present instance is a back space wheel which is operative by a key actuated pawl to turn the carriage in reverse direction a letter space distance at a time.

In carrying out my invention, in order to prevent separation of the rack and pinion if the back space pawl should be too forcibly actuated I provide a latch which is automatically operated by the back space pawl to lock the rack and pinion together so as to prevent excessive backward movement of the carriage.

It will be understood that in the present

form of my invention the rack and pinion are normally separable but are automatically locked together or positively maintained in engagement when the back spacing devices are operated. The back spacing devices are not claimed *per se* herein as they are part of the subject-matter of an application filed by me of even date herewith. Serial No. 315,850.

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.

In the accompanying drawings, Figure 1 is a vertical front to rear sectional view of so much of a typewriting machine as is necessary to a clear understanding of my invention. Fig. 2 is a rear elevation of the machine, parts being broken away and parts being omitted. Fig. 3 is a full-sized top plan view of part of the carriage and the carriage feeding mechanism, showing my invention applied thereto, parts being broken away and parts being omitted. Fig. 4 is a fragmentary top plan view showing the locking mechanism for the feed rack and the associate parts, the back space pawl being shown in section. Fig. 5 is a rear elevation of a part of the back spacing mechanism, the top plate of the machine being shown in section. Fig. 6 is a view corresponding to Fig. 5 but showing some of the parts in different relations from those in which they appear in said Fig. 5. Fig. 7 is an enlarged transverse central sectional view of the escapement wheel, back space wheel, and their associate devices. Fig. 8 is a sectional view taken on a plane represented by the line $x-x$ in Fig. 7 and looking in the direction of the arrows at said line. Fig. 9 is an enlarged fragmentary rear view showing part of the escapement wheel and the normally engaged escapement dog, which dog is provided with a back stop, said back stop being shown in operative position. Fig. 10 is a perspective view of a member hereinafter termed a locking lever.

My invention is shown as applied to a machine generally resembling the Monarch typewriter, but it is to be understood that the nature of the invention is such that it may readily be adapted to other forms of writing machines.

Referring first to Figs. 1 and 2 of the

drawings, the frame of the machine is shown as comprising a base 1, corner posts 2 rising from said base and a top plate 3 supported on said corner posts. Key levers 4 are fulcrumed on a fulcrum plate 5 mounted at the rear of the base, each key lever being provided with a restoring spring 6 and having pivoted to it at 7 a sub-lever 8. Each sub-lever is slotted at 9 to cooperate with a fixed abutment 10 extending from side to side of the machine beneath the key levers. A link 11 connects the upper end of each sub-lever with a type bar 12 pivotally supported in a type bar hanger 13, said hanger being secured by a screw 14 to a vertically disposed segmental type bar support 15. For the purposes of the present invention it is immaterial whether or not said segmental support is shiftable but in this construction of machine said segmental support is provided with suitable shifting mechanism. The type bar hangers 13 are radially arranged in segments of circles and the type bars 12 are normally supported at their free ends on a type rest 16 and are adapted to cooperate with the front face of a rotary platen 17. The platen is journaled in side bars 18 extending horizontally forward from the opposite ends of a rear bar 19, said side bars and rear bar constituting a platen carrier or carriage. The top and bottom faces of the rear bar are formed with longitudinal grooves to cooperate with anti-friction balls 20, said balls also cooperating with top and bottom stationary grooved guide rails 21 secured by screws 22 to standards 23 rising from the top plate. Bearing lugs 24 project inwardly from the rear of each side arm 18 of the platen carriage as best shown in Fig. 3. Journaled in said bearing lugs are pivot pins 25 which have secured to their inner ends rearwardly projecting arms 26 and to their outer ends, by screws 27, release levers 28, each of the latter terminating at its forward end in a release key 29.

Suitably secured to the rear end portions of the pivoted arms 26 is a carriage feed rack 30, said feed rack normally meshing with a carriage feed pinion 31 which is fixed at the forward end of a shaft 32 journaled in a bracket 33 fixed to the top plate by screws 34. A circular feed rack or escapement wheel 35 is loosely mounted on the rear end portion of the shaft 32, said escapement wheel, as shown in Fig. 7, having a forwardly projecting hub 36 which surrounds the shaft 32 and serves as a bearing therefor and which in turn has a bearing in the supporting bracket 33. The escapement wheel 35 is provided with peripheral teeth 37 and has suitably secured to its rear face, as by rivets 38, a small ratchet wheel 39 (Figs. 7 and 8). A housing or cover 40 surrounds the ratchet wheel 39 and is provided with a central boss or hub 41 which

receives set screws 42, the ends of said set screws abutting against the rear end portion of the shaft 32 and serving to maintain the housing in a fixed relation with said shaft. A pawl 43 is pivoted at 44 to said housing and is pressed into engagement with the ratchet wheel 39 by a leaf spring 45, said spring being secured by a rivet 46, to the inner wall of the housing 40. The construction is such that when the shaft 32 is turned in letter space direction, indicated by the arrow in Fig. 8, the escapement wheel 35 is caused to turn with said shaft by reason of the engagement of the pawl 43 with the ratchet wheel 39, but when the carriage is retracted and the shaft is turned in the opposite direction the pawl 43 is adapted to slide over the teeth of the ratchet wheel 39 and a relative turning movement between the shaft 32 and the escapement wheel 35 may be effected.

Fixedly secured to the rear end portion of the shaft 32 is a toothed back space wheel. In the present instance I prefer to provide such a ratchet wheel by forming the periphery of the housing 40 with teeth 47. In this construction the housing 40 not only serves its original purpose as a cover for the ratchet wheel 39 and pawl 43 but also performs the functions of a back space wheel which is cooperative with the other back spacing devices presently to be described to effect a step-by-step movement of the carriage backwardly or in an opposite direction to the step-by-step letter space feeding movement thereof.

Normally engaging one or another of the teeth 37 of the escapement wheel 35 is a dog 48 pivotally mounted at 49 near the top of the upright arm 50 of a vibratory dog carrier or rocker 51, said dog carrier, as clearly shown in Fig. 2, being pivoted at its ends on screw pivots 52 which are supported in a bracket 53 depending from the top plate. The dog 48, best shown in Fig. 9, is provided with an individual dog spring 54 which constantly tends to press the dog away from the face of the rocker arm 50 or towards the right in Fig. 9. A back stop 55 is preferably mounted on the dog 48 and is adapted to cooperate with the backs of the teeth 37 of the escapement wheel to prevent excessive reverse turning movement of said escapement wheel, said back stop operating for this purpose in a manner fully set forth in the patent to Carl Gabrielson, No. 717,837, dated January 6th, 1903. The operative position of the back stop is shown in Fig. 9 but it will be understood that normally said stop is maintained out of the path of the teeth of the escapement wheel, as shown in Fig. 2. A second dog 56 is mounted at the top of the dog rocker and is adapted to cooperate with the escapement wheel but is normally disengaged therefrom.

In the present instance the dog 56 is shown secured in fixed relation with the rocker arm 50. The dog rocker is provided with a restoring spring 57 and has a horizontally disposed forwardly projecting arm 58, which is connected by a link 59 with an arm 60 of a universal bar frame pivoted at 61 near the sides of the base and carrying a universal bar 62. Said universal bar extends from side to side of the machine beneath the series of character key levers 4 and the space levers (not shown). When any key lever 4 is actuated the associate type bar is caused to cooperate with the platen in a known manner and the dogs 48 and 56 cooperate with the escapement wheel 35 to permit the carriage to be moved a letter space distance towards the left under the influence of the carriage spring drum 63 pivoted at 64 to the bracket 53 and connected by a band or strap 65 with a pin 66 depending from the rear bar 19 of the carriage.

It is at times desirable to move the carriage a letter space distance at a time in reverse direction, that is, in a direction opposite to that of the letter space feed movement. To accomplish this result I provide mechanism now to be described. A back spacing pawl arm 67 (Figs. 2, 5 and 6) is pivoted at 68 to the left-hand arm (considered from the front of the machine) of a horizontally disposed lever 69 of the first order, said lever being pivoted at 70 to a lug 71 depending from the top plate 3. The pawl arm 67 is provided with a tail portion 72, said tail portion being normally maintained in engagement with the under side of the top plate by a C-shaped spring 73, said spring being secured to the lever 69 at one end by a screw 74 and bearing at its free end against the tail of the pawl. The pawl arm or pawl 67 is vertically disposed and is provided at its upper end with a pawl tooth 75 at one side and at the opposite side with a cam face 76, the purpose of which will be presently explained. From an inspection of Fig. 2 it will be noted that normally the pawl tooth 75 is disengaged from the teeth 47 of the back space wheel or housing 40. The left-hand arm of the pawl supporting and actuating lever 69, as viewed from the front of the machine, is provided with a stop portion 77 which is normally maintained in contact with the under side of the top plate. The right-hand arm of the lever 69 (viewed from the front of the machine) is connected by a vertically disposed link 78 with a key lever 79, pivoted at 80 (Fig. 1) intermediate its ends to a lug 81 (Fig. 2) projecting laterally inward from the right-hand side of the base. The key lever 79 is provided with a key button 82 and with a restoring spring 83 which is coiled around the supporting lug 81 and serves to restore the key lever 79 to normal position and to normally maintain

the stop portion 77 on the lever 69 in contact with the top plate, as illustrated in Fig. 2.

Referring now to the operation of the back spacing mechanism, when the back space key 82 is actuated the rear arm of the lever 79 will be elevated, raising the link 78 and the right-hand arm of the lever 69 and lowering the left-hand arm of said lever about the pivot 70. During the first part of the downward movement of the left-hand lever arm, the tail 72 of the back space pawl 67 will be maintained in contact with the top plate by the spring 73, the result being that the pawl will be turned on its pivot until said pawl engages with the back space wheel 40. Fig. 5 illustrates the position of the pawl 67 at this stage, the pawl tooth 75 being fully engaged with one of the teeth 47 of the back space wheel. When the pawl 67 has been turned on its pivot to the position shown in Fig. 5, further inward pivotal movement of the pawl will be prevented by the engaged tooth 47 of the back space wheel and as the downward movement of the left-hand lever arm of the lever 69 is continued the pawl will move down with said lever arm and because of the engagement of said pawl with the back space wheel will turn said back space wheel in the direction of the arrow in Fig. 5 and from the position illustrated in said figure to that shown in Fig. 6. As shown in the latter figure the downward movement of the pawl is arrested by the engagement of the right-hand end of the lever 69 with the under side of the top plate 3. The back space wheel, it will be recalled, is fixedly connected with the shaft 32 so that during this turning movement said shaft will be turned with the back space wheel and the pawl 43 will slide over one of the teeth of the ratchet wheel 39 and will engage behind said tooth, thus holding the back space wheel and the parts controlled thereby in the positions to which they have been moved. The shaft 32 is connected through the pinion 31 and rack 30 with the carriage and consequently the carriage will be moved in reverse direction, the parts being so proportioned and arranged that at each actuation of the back space key 82 the extent of the backward movement of the carriage amounts to one letter space. When the back space key is released the key lever 79, link 78 and lever 69 will be restored to normal position by the spring 83.

During the latter part of the return movement of the lever 69 the tail 72 of the back space pawl will be swung pivotally outward or away from the back space ratchet wheel so that when the parts reach normal position the back space pawl will be completely disengaged from the back space wheel as shown in Fig. 2. It will be understood that during the back space turning movements of the

back space wheel 40 and shaft 32 these parts will turn relatively to the escapement wheel 35. As soon as the pressure of the carriage main spring is removed from the escapement wheel during the initial part of each back space movement, said escapement wheel will turn slightly in reverse direction, both because of the friction of the pawl 43 on the ratchet wheel 39 and also because of the pressure of the dog spring 54 on the teeth 37 of said escapement wheel. A very slight reverse movement of the escapement wheel, however, suffices to bring the back stop 55 into operative position as shown in Fig. 9, thereby preventing further turning of said escapement wheel in reverse direction and holding it motionless during the remainder of the back space turning movement of the other parts.

It will be noted that in the hereinbefore described construction the carriage is separably or disconnectibly connected with its letter space feeding mechanism by means of the rack 30 and pinion 31, said rack being adapted to be swung upward about the pivots 25 out of mesh with the pinion by pressure on either of the release keys 29. Normally the rack 30 is maintained in mesh with the pinion 31 by spring pressure in a manner presently to be described. Prior to my present invention in machines employing a disconnectible or separable spring pressed connection between the carriage and its letter space feeding devices it has sometimes happened that the back space devices have been operated with so much force that the carriage acquires enough momentum to overcome the tension of the spring connecting it with its letter space feeding devices so that the carriage rack is forced out of engagement with the feed pinion and allows the carriage to move two or more letter space distances instead of one in backward direction. The angle at which the teeth of the rack and pinion engage with each other is conducive to this separation or disengagement, as will be clearly understood from an inspection of Fig. 2.

In order to prevent undesired or chance separation or disconnection of the carriage feeding devices from the carriage, I provide means for locking the carriage feed rack and feed pinion in mesh so as to maintain them positively engaged at desired times, as, for example, during the operation of the back spacing devices. In the present instance I have shown said locking means as normally inoperative and have provided means operating automatically to lock or operate said locking means when the back spacing devices are actuated. The preferred form of this character of locking means comprises two cooperating locking members, one of which is shown detached in Fig. 10 and is designated as a whole by the numeral 84.

The member 84 is an L-shaped lever preferably made of sheet metal and comprises a body portion 85 having an opening 86 near one end and an arm 87 rising substantially at right angles from the body portion at the other end thereof and terminating in a lip or hook 88. A stop arm 89 depends from the body portion about centrally thereof.

As clearly shown in Fig. 2 the member or lever 84 is pivotally secured to the lower fixed track-way 21 by means of a shouldered screw 90 which passes through the opening 86 in the body of the lever and enters a threaded opening in the rear wall of the track-way 21. In normal position the stop arm 89 contacts with the top plate 3 and the lip 88 lies over and just out of contact with the top edge of the feed rack 30. A stop ledge or lip 91 is bent backward horizontally from the upper edge of the body portion 85 of the member 84 near the arm 87, and secured to the under side of said ledge 91 by a headed screw 92 is a flat spring 93 (Figs. 2 and 3), said spring extending obliquely downward towards the top plate, the free end of said spring contacting with the top plate at the opposite side of the pivot screw 90 from the point at which said spring is secured to the lever 84. The arrangement is such that the spring 93 tends to maintain the lever 84 constantly in the position shown in Fig. 2. A very slight upward movement of the carriage rack 30 about its pivots suffices to bring said rack into contact with the stop lip 88 of the lever 84 and any further upward movement of the rack will be against the pressure of the spring 93. The spring pressure, of course, comes into play before the disengagement of the rack teeth from the teeth of the feed pinion 31, so that in effect said rack is maintained in spring pressed engagement with said pinion while at the same time during longitudinal movements of the carriage to and fro, the rack, being just out of touch with the stop lip 88, will not frictionally engage the latter unless during such longitudinal movements the rack should be slightly thrown upwards about its pivots.

Rising from the top plate at the rear of the member or lever 84 is a short post or standard 94 and pivotally secured to the top of said post by a shouldered screw 95 is a second locking member which as herein shown is in the form of a lever or latch 96 having a forwardly projecting arm 97 and a rearwardly projecting arm 98 from one side of which latter arm depends a stop lug 99. A coiled spring 100 surrounds the post 94 below the latch 96, one end of said spring engaging a hole in the rear arm 98 of said latch and the other or lower end of said spring being secured in a collar 101. The collar surrounds the post 94 and may rest on the top plate 3 of the machine, being nor-

mally held in a fixed relation with the post by a set screw 102, but being circumferentially adjustable on said post so as to regulate the tension of the spring 100. Said spring tends constantly to swing the rear arm of the latch 96 to the left or in the direction of the arrow in Fig. 3 and to maintain the stop lug 99 on said arm pressed against the left-hand end of a comb plate 103, which comb plate is secured by screws 104 to the top of lugs 105 of a supporting bracket 106 for a tabulating mechanism. Said tabulating mechanism forms no part of my invention and it is not deemed necessary to describe its parts further. It will be seen from an inspection of Fig. 3 that when the latch is in normal position the end portion of its forward arm 97 is at the right of and out of the path of the stop ledge 91 on the lever 84. From an inspection of Fig. 2 it will be noted that in the normal position of the latch 96 the inner edge of its rear arm lies below and inwardly or towards the center of the machine from the cam face 76 on the pawl 67.

From what has been said it will be apparent that when either of the release keys 29 is operated the carriage feed rack 30 will be swung upwardly about its pivots 25 and after a very slight inward movement will engage the lip 88 of the member 84, the remainder of the releasing movement of the rack being made against the pressure of the spring 93, which spring will restore the rack into engagement with the feed pinion when pressure is removed from the release key 29. During the releasing movement of the rack 30 the lever 84 will be swung upwardly about its pivot screw 90 and will not be checked or interfered with by the latch 96, there being sufficient space between the arm 97 of the latch and the spring 93 to permit this movement.

When the back space key 82 is actuated the initial movement of the pawl 67 will, as has been explained, be a pivotal one and said pawl will be swung about the screw 68 from the position shown in Fig. 2 to that shown in Fig. 5. From an inspection of Fig. 5 it will be seen that the lower end of the cam face 76 will at this time lie just above and out of engagement with the inner edge of the rear arm of the latch 96. During the subsequent downward movement of the pawl 67 the cam face 76 will engage with the inner edge of the rear arm 98 of the pivoted latch 96, swinging said arm about the pivot 95 in the direction of the arrow in Fig. 4 and swinging the forward arm 97 of said latch to the left and over the ledge 91 of the member 84. The arm 97 of the member or latch 96 just clears the ledge 91 so that the pivotal movement of the member 96 is free except for the resistance of the

coiled spring 100. When the pawl 67 reaches the limit of its downward movement, as shown in Fig. 6, the latch 96 will be in the position illustrated in Fig. 4. From an inspection of the latter figure it will be apparent that the latch 96 is in a position to prevent other than a very slight upward movement of the lever 84 about its pivot 90, the ledge 91 of said member as soon as it starts to rise coming in contact with the forward arm 97 of the locking member or latch 96. It will, however, be apparent that the cam face 76 of the pawl 67 serves during the back spacing movement of said pawl to automatically bring the two parts 84 and 96 of the locking mechanism into cooperative relation to lock the separable or disconnectible connections between the carriage and its step-by-step feeding devices, that is, to maintain the rack 30 and pinion 31 positively in mesh so that overthrow or excessive movement of the carriage during back spacing operations is prevented. When the back space key 82 is released the parts of the back spacing mechanism will be restored to normal position as previously described, the pawl 67 as it moves upward permitting the latch 96 to be restored by its spring 100 to the inoperative position shown in Fig. 3.

Various changes may be effected within the scope of my invention.

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

1. In a typewriting machine, the combination of a carriage: step-by-step feeding mechanism for said carriage normally disconnectibly connected to said carriage: means for locking said step-by-step feeding mechanism and said carriage in positive engagement, said means being normally inoperative: and key actuated means for rendering operative the locking means.

2. In a typewriting machine, the combination of a carriage: carriage feeding mechanism including devices normally adapted to be maintained in spring-pressed engagement and capable of being disconnected to release said carriage: a key for spacing the carriage: and means automatically operative by said key for locking said disconnectible devices in operative relation, said means being normally inoperative.

3. In a typewriting machine, the combination of a carriage: step-by-step feeding mechanism for said carriage normally disconnectibly connected to said carriage: back spacing devices for said carriage: and means operating automatically to lock said step-by-step feeding mechanism to said carriage when said back spacing devices are operated.

4. In a typewriting machine, the combination of a carriage: carriage feeding devices including a rack and pinion normally disconnectible: means for locking said rack and

pinion in mesh, said means being normally inoperative; and key actuated means for rendering operative the locking means.

5 5. In a typewriting machine, the combination of a carriage; carriage feeding devices including a rack and pinion normally disconnectible to release said carriage; back spacing devices; and means operated by said back spacing devices to lock said rack and pinion in mesh.

10 6. In a typewriting machine, the combination of a carriage; a feed rack connected thereto; step-by-step feeding devices including a feed pinion on the frame of the machine, said rack and pinion being normally disconnectible; back spacing devices for said carriage; and means operating automatically to lock said rack and pinion in mesh when said back spacing devices are operated.

15 7. In a typewriting machine, the combination of a carriage; step-by-step feeding mechanism therefor; means normally adapted to maintain said carriage in disconnectible engagement with said step-by-step feeding mechanism; and other means for rendering said last recited means operative to lock said carriage and its step-by-step feeding mechanism in positive engagement, said other means being normally inoperative.

20 8. In a typewriting machine, the combination of a carriage; step-by-step feeding mechanism therefor; back spacing devices; means normally adapted to maintain said carriage in disconnectible engagement with said step-by-step feeding mechanism; and means operating automatically on said first recited means when said back spacing devices are actuated to cause said first recited means to lock said carriage and its step-by-step feeding mechanism in positive engagement.

25 9. In a typewriting machine, the combination of a carriage; step-by-step feeding devices therefor including a rack and pinion normally disconnectible; a two-part lock operative to lock the rack and pinion in mesh, but normally inoperative to do so; and key actuated means for rendering the two-part lock operative to lock the rack and pinion in mesh.

30 10. In a typewriting machine, the combination of a carriage; carriage feeding devices including a rack and pinion; means for disconnecting the rack and pinion; a member adapted to maintain the rack and pinion in spring-pressed engagement; and means for rendering said member operative to lock said rack and pinion in mesh, said means being normally inoperative.

35 11. In a typewriting machine, the combination of a carriage; carriage feeding devices including a rack and pinion; means for disconnecting said rack and pinion; back spacing devices; a member operating to maintain said rack and pinion in spring-

pressed engagement; and means automatically operated by said back spacing devices for rendering said member operative to lock said rack and pinion in mesh.

40 12. In a typewriting machine, the combination of a carriage; carriage feeding devices including a rack and pinion; means for disconnecting the rack and pinion; a spring-pressed lever pivoted to a fixed part and normally in position to engage one of the rack and pinion parts as it starts to unmesh and hold said part spring pressed in mesh; and means for rendering said lever fixed so as to maintain said rack and pinion locked positively in mesh.

45 13. In a typewriting machine, the combination of a carriage; a feed rack pivotally connected to said carriage; carriage feeding devices including a feed pinion journaled on a fixed part and normally meshing with said rack; a lever pivoted to a fixed part and having a portion in position to engage said rack; a spring for said lever; and means for locking said lever in normal position.

50 14. In a typewriting machine, the combination of a carriage; a feed rack pivotally connected to said carriage; carriage feeding devices including a feed pinion journaled on a fixed part and normally meshing with said rack; back spacing devices; a lever pivoted to a fixed part and having a portion in position to engage said rack; a spring for said lever; and means for locking said member in normal position, said means being automatically operated by said back spacing devices.

55 15. In a typewriting machine, the combination of a carriage; step-by-step feeding mechanism for said carriage including disconnectible devices; and means for locking said step-by-step feeding mechanism and said carriage in positive engagement, said means being normally inoperative and comprising a two part lock, one part of which is always in operative position.

60 16. In a typewriting machine, the combination of a carriage; step-by-step feeding mechanism for said carriage normally disconnectibly connected to said carriage; and means for locking said step-by-step feeding mechanism and said carriage in positive engagement, said means comprising a two part lock, one part of said lock being normally in operative position and the other part of said lock being normally in inoperative position.

65 17. In a typewriting machine, the combination of a carriage; step-by-step feeding mechanism for said carriage normally disconnectibly connected to said carriage; back spacing devices; and means for locking said step-by-step feeding mechanism and said carriage in positive engagement, said means comprising a two part lock, one part of said lock being normally in operative position

and the other part of said lock being normally in inoperative position but rendered automatically operative when said back spacing devices are operated.

5 18. In a typewriting machine, the combination of a carriage; step-by-step feeding mechanism for said carriage including disconnectible devices: means for locking said step-by-step feeding mechanism and said carriage in positive engagement, said means comprising a locking latch which is normally inoperative; and key actuated means for rendering said locking latch operative.

15 19. In a typewriting machine, the combination of a carriage; step-by-step feeding mechanism for said carriage normally disconnectibly connected to said carriage: means for locking said step-by-step feeding mechanism and said carriage in positive engagement, said means being normally inoperative and including a locking latch pivoted on a fixed portion of the machine: and key actuated means for rendering the locking means operative.

25 20. In a typewriting machine, the combination of a carriage; step-by-step feeding mechanism for said carriage normally disconnectibly connected to said carriage; and means including a two-part lock for locking said step-by-step feeding mechanism and said carriage in positive engagement, one part of said lock being normally in operative position and the other part of said lock consisting of a pivoted latch normally in-
35 operative.

40 21. In a typewriting machine, the combination of a carriage; step-by-step feeding mechanism for said carriage normally disconnectibly connected to said carriage; and means comprising a two-part lock for locking said step-by-step feeding mechanism and said carriage in positive engagement, one of the parts consisting of a spring pressed latch pivoted to a fixed part of the machine.

50 22. In a typewriting machine, the combination of a carriage; step-by-step feeding mechanism for said carriage normally disconnectibly connected to said carriage; back spacing devices; and means for locking said step-by-step feeding mechanism and said carriage in positive engagement, said means including a locking latch pivoted on a fixed part of the machine and normally inoperative, said latch being rendered operative automatically when said back spacing devices are operated.

60 23. In a typewriting machine, the combination of a carriage; step-by-step feeding mechanism for said carriage disconnectibly connected to said carriage; back spacing devices for said carriage including a back space

wheel and a back space pawl operative on said wheel; and means for locking said step-by-step feeding mechanism and said carriage in positive engagement, said means including a pivoted latch operative by the back space pawl.

70 24. In a typewriting machine, the combination of a carriage; step-by-step feeding mechanism for said carriage disconnectibly connected to said carriage; back spacing devices for said carriage including a back space wheel and a back space pawl operative on said wheel and having a cam face; and means for locking said step-by-step feeding mechanism and said carriage in positive engagement, said means including a pivoted latch operative by the cam face of the back space pawl.

80 25. In a typewriting machine, the combination of a carriage; step-by-step feeding mechanism for said carriage normally disconnectibly connected to said carriage; back spacing devices for said carriage including a toothed back space wheel and a key actuated pawl operative on said wheel and having a cam face; and means comprising a two part lock for locking said step-by-step feeding mechanism and said carriage in positive engagement, one part of the two-part lock being composed of a spring pressed latch pivoted to a fixed part and normally inoperative, said latch being rendered operative by the cam face of the back space pawl when said pawl is actuated.

90 26. In a typewriting machine, the combination of a carriage; a feed rack pivoted thereon; step-by-step feeding mechanism including a feed pinion having a shaft journaled on a fixed part; a toothed back space wheel fixed to the shaft carrying said pinion; a key actuated back space pawl operative on said back space wheel and having a cam face; a spring pressed lever pivoted to a fixed part and having an arm for controlling said feed rack; and a spring pressed locking latch or lever pivoted to a fixed part and normally inoperative, one arm of said latch being operative on said first named pivoted lever to maintain the latter positively in normal position and the other arm of said latch being contactive with the cam face on said back space pawl, said latch being rendered operative automatically by said back space pawl when the latter is actuated.

115 Signed at Syracuse, in the county of Onondaga, and State of New York, this 4th day of May A. D. 1906.

GEORGE A. SEIB.

Witnesses:

JOHN S. MITCHELL,
W. J. LOGAN.