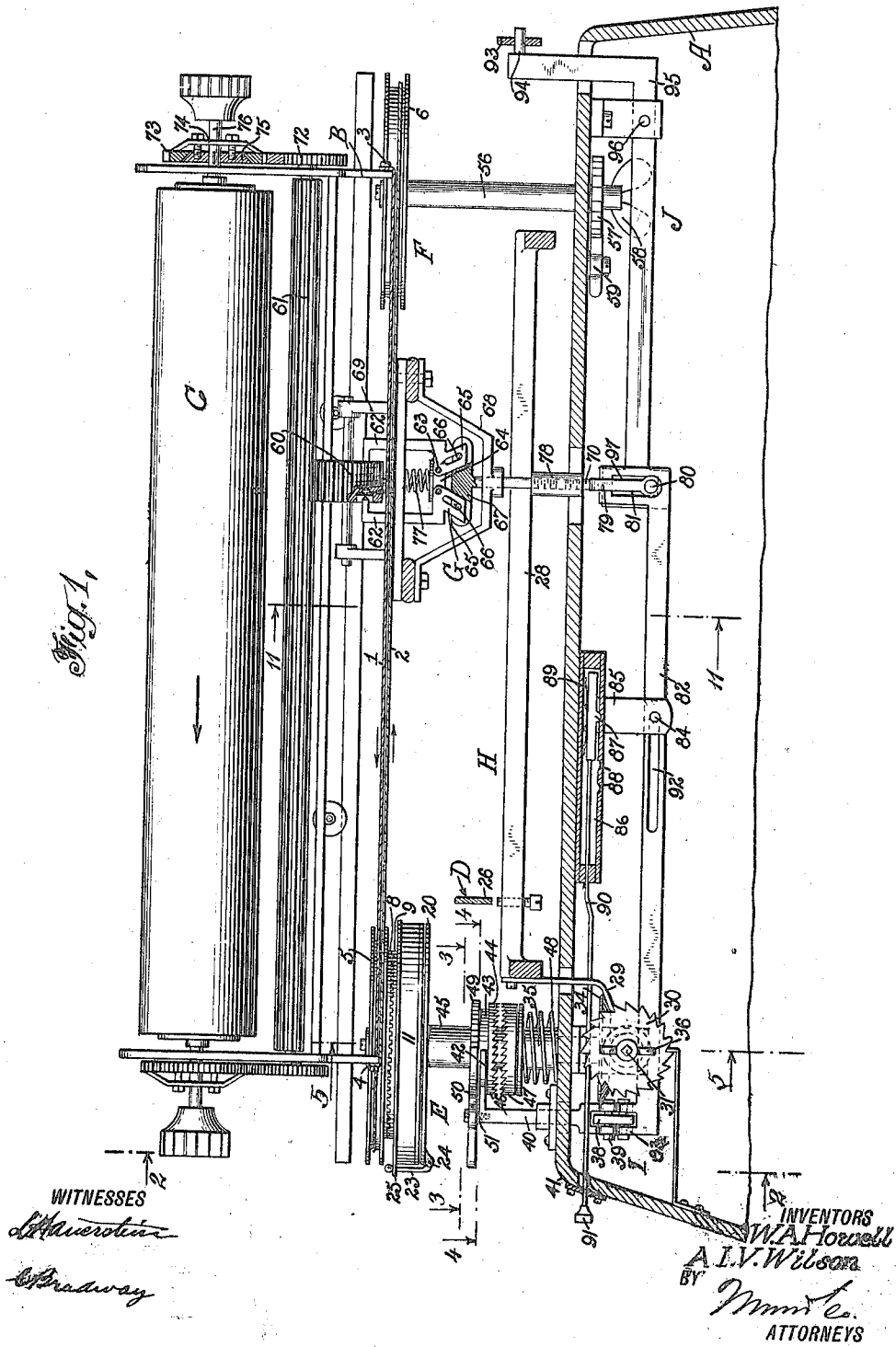


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APPLICATION FILED JUNE 21, 1917.

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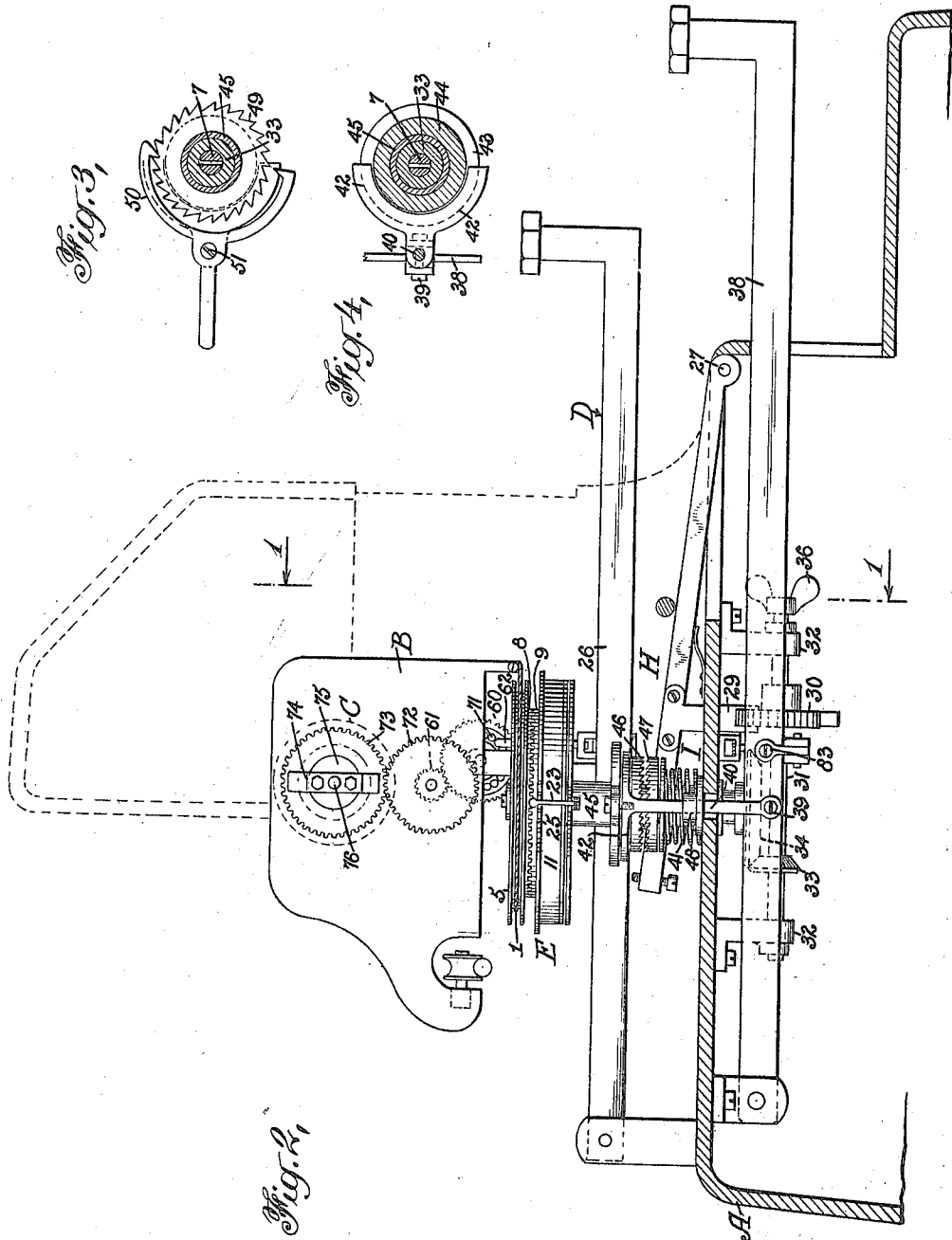
Patented Apr. 30, 1918.
4 SHEETS—SHEET 1.



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WITNESSES
W. A. Howell
A. I. V. Wilson

INVENTORS
W. A. Howell
A. I. V. Wilson
BY *Wm. L. Wilson*
ATTORNEYS

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4 SHEETS—SHEET 3.

Fig. 6,

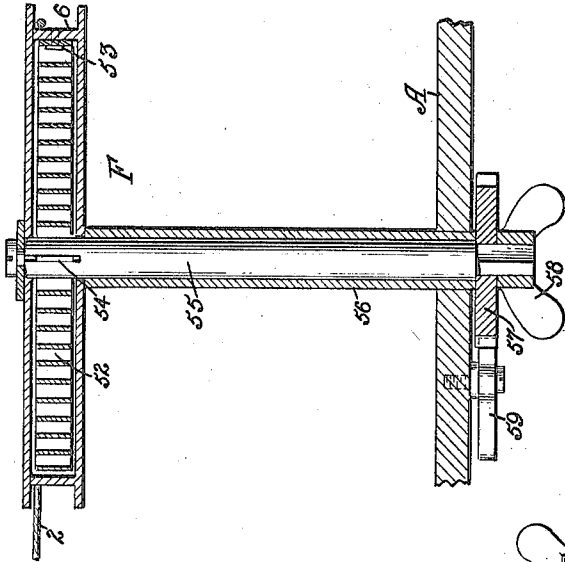
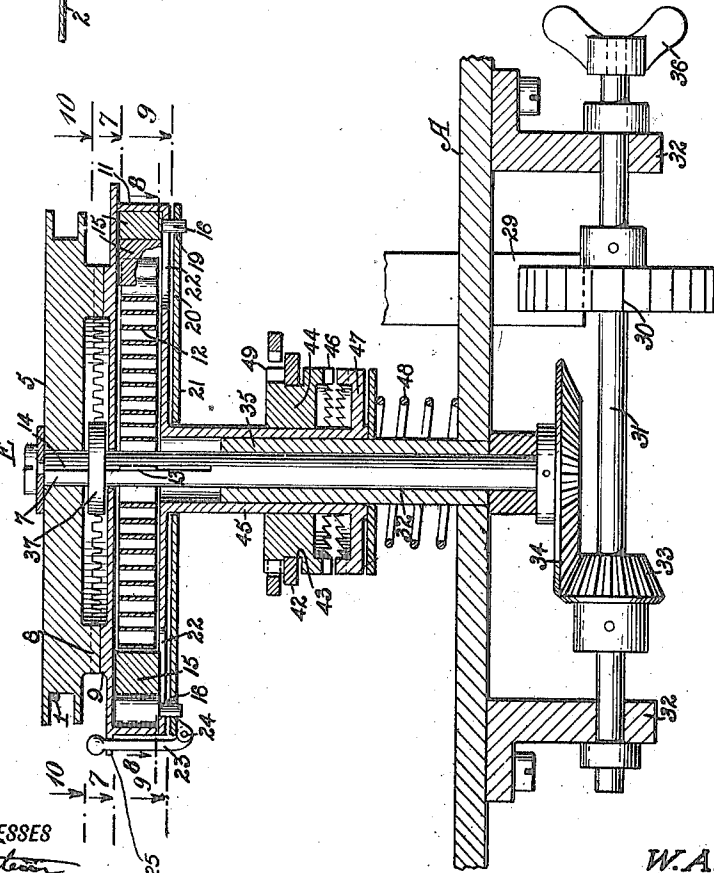


Fig. 5,



WITNESSES
W. A. Howell
A. I. V. Wilson

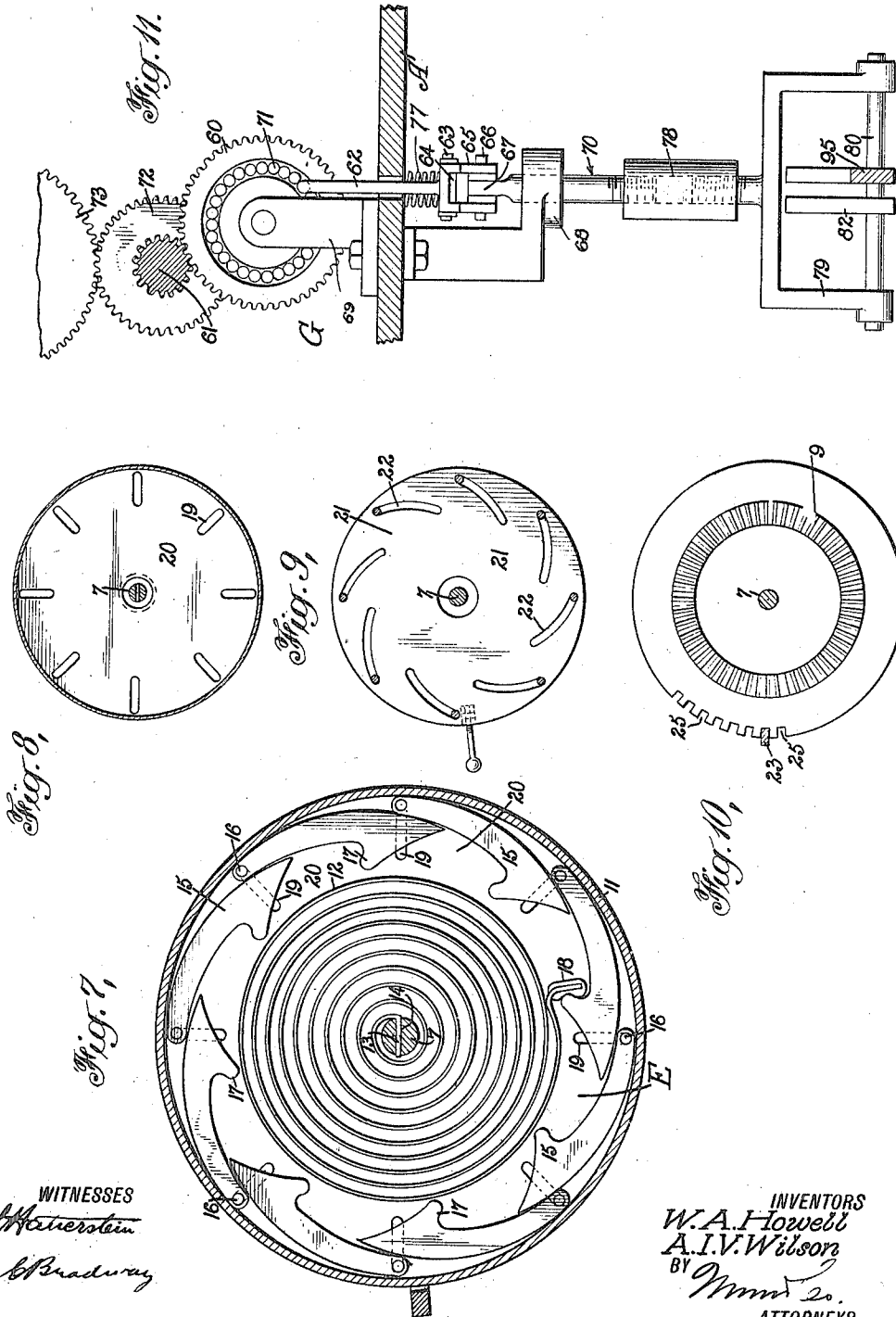
INVENTORS
 W. A. Howell
 A. I. V. Wilson
 BY *Wm. C. Co.*
 ATTORNEYS

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4 SHEETS—SHEET 4.



WITNESSES
M. H. Stein
E. Bradway

INVENTORS
W. A. Howell
A. I. V. Wilson
BY *Wm. L. Co.*
ATTORNEYS

UNITED STATES PATENT OFFICE.

WILLIAM A. HOWELL AND ALVIN I. V. WILSON, OF ATLANTA, GEORGIA.

TYPE-WRITER CARRIAGE AND PLATEN OPERATING MEANS.

1,264,800.

Specification of Letters Patent.

Patented Apr. 30, 1918.

Application filed June 21, 1917. Serial No. 176,065.

To all whom it may concern:

Be it known that we, WILLIAM A. HOWELL and ALVIN I. V. WILSON, citizens of the United States, and residents of Atlanta, in the county of Fulton and State of Georgia, have invented a new and Improved Type-Writer Carriage and Platen Operating Means, of which the following is a full, clear, and exact description.

This invention relates to typewriting and other machines embodying a sheet carrier and platen, and the invention relates more particularly to key-controlled means for actuating the carriage and platen without the need of the operator removing the hands from the keyboard, so that at any intermediate position or at the end of a line by the depression of a key on the keyboard, the carriage will automatically return to initial position and simultaneously the platen will turn to move the paper for the next line or return to any intermediate position.

The invention has for its objects to improve the construction and operation of mechanism of the character referred to so as to be reliable and efficient in use, comparatively simple and inexpensive to manufacture, and so designed as to be applicable to various types of typewriting and kindred machines.

A more specific object of the invention is the provision of a carriage-operating means which includes a spring or other motor for moving the carriage during the writing travel and which is constantly kept energized by means operated by the pressing of the usual keys, there being a special key which disconnects the said motor means from the carriage, so that the same can be returned to normal position by a spring or other motor means of less power than the first motor means, and when the carriage has reached the end of its return movement the first motor means is automatically connected with the carriage to cause the same to move again in the writing direction as the typewriter keys are manipulated.

Another object of the invention is to provide automatic means of novel construction for turning the platen one, two or three spaces each time the carriage returns, and in combination with said feeding means for the platen is a manually operated key, whereby the platen can be turned independently by the operator whenever it is necessary.

A further object is to provide means for limiting the winding of the spring of the motor means for moving the carriage in the writing direction, so that the tension of the spring cannot exceed a predetermined amount.

With such objects in view, and others which will appear as the description proceeds, the invention comprises various novel features of construction and arrangement of parts which will be set forth with particularity in the following description and claims appended hereto.

In the accompanying drawings which illustrate one embodiment of the invention and wherein similar characters of reference indicate corresponding parts in all the views,

Figure 1 is a vertical section of sufficient of a typewriter to illustrate the invention, the carriage of the typewriter being shown in approximately mid position, the section being taken on the line 1-1, Fig. 2;

Fig. 2 is a vertical transverse section on the line 2-2, Fig. 1;

Figs. 3 and 4 are horizontal sections respectively on the lines 3-3 and 4-4, Fig. 1;

Fig. 5 is an enlarged sectional view of the motor means and associated parts for moving the carriage during the writing of a line;

Fig. 6 is a detail sectional view of the carriage-return motor means;

Fig. 7 is a sectional view on the line 7-7, Fig. 5, to show the slip device in the carriage motor means;

Figs. 8, 9 and 10 are detail sectional views on a reduced scale, respectively on the lines 8-8, 9-9 and 10-10, Fig. 5; and

Fig. 11 is a sectional view on the line 11-11, Fig. 1, showing the means for actuating the platen.

In the present instance the invention is shown in connection with an Oliver typewriter, but it is to be understood that it is not limited to this application.

Referring to the drawings, A designates the frame of the machine, B the carriage, C the platen, D the keyboard lever, E the major carriage operating motor means, F the minor or return carriage motor means, G the platen feed mechanism, H the depressor frame for maintaining the tension on the major motor means, I the controlling device for effecting the release of the major motor means from the carriage, the locking of such

means and the operating of the platen feeding device, and J the manually operated means for the platen feeding device.

The frame A, carriage B, platen C and keyboard D are of usual construction. The carriage B is connected with cords 1 and 2, respectively, at the points 3 and 4, and the cords wind respectively on the reels or drums 5 and 6. The drum 5 is loosely mounted on the upper end of a vertical shaft 7, Fig. 5, and the under side of the drum 5 has clutch teeth 8, which engage corresponding clutch teeth 9 on a drum or housing 11 of the spring 12 which constitutes the main or major carriage operating means to move the carriage during the writing of a line. The inner end 13 of the coiled spring 12 is engaged in a slot 14 in the shaft 7, so that by the turning of the shaft the spring can be wound and placed under tension. The outer end of the spring is connected by a slip connection with the drum 11. This slip connection includes a plurality of pivoted dogs 15 which swing on individual pins 16, and each dog has a projection or nose 17, and on the free end of the spring is a catch 18 to releasably engage the nose of one of the dogs, but when the tension of the spring exceeds a predetermined amount, the free end of the spring flexes and the catch 18 slips off the engaged dog and flies to the next dog, this operation being repeated as long as the spring tends to increase in tension beyond a certain point. The maximum tension of the spring can be adjusted by changing the position of the dogs with respect to the center of the spring. For this purpose each pin 16 is slidable in a radial slot 19 in the bottom 20 of the casing 11, and under the casing 11 is a plate 21 rotatable concentrically with the shaft 7, and in this plate are curved slots 22 lying between radial and tangential lines. The pins 16 engage in these slots so that by the turning of the plate 21 the pins can be thrown inwardly or outwardly, and as adjacent dogs 15 overlap, the inward or outward movement of the pins 16 on the dogs will throw the latter toward or from the center of the spring, and consequently the tension at which the spring will snap from one dog to the next can be varied as desired. The plate 21 is held in any desired position of adjustment by means of a latch 23 pivoted at 24 thereon and engageable in any one of a number of recesses 25 in the periphery of the casing 11, as shown in Figs. 5 and 10.

The spring 12 is adapted to be kept under tension by impulses from the operation of the keyboard levers. For this purpose the depressible frame H lies under the levers 26 of the keyboard and is pivoted on the machine frame at 27, Fig. 2, the said frame including a bar 28 extending transversely to the levers 26 so that when any lever 26 is

depressed the frame H is also depressed and caused to wind the spring 12. This winding is effected by means of a pawl 29 on the depressible frame H, and a ratchet wheel 30 engaged by the pawl, said wheel being 70 mounted on a horizontal shaft 31, as clearly shown in Fig. 5. The shaft 31 is journaled in bearings 32 on the machine frame and has a bevel gear 33 meshing with a bevel gear 34 on the lower end of the shaft 7, 75 which latter is journaled in a vertical bearing 35. On the shaft 31 is a knob or equivalent device 36 whereby the spring 12 can be wound initially by hand. When the spring is wound to the desired tension, the operation of the keyboard levers does not increase 80 the tension more than a determinable amount, regulated by the slip connection, since the spring slips successively past the dogs 15. When the carriage returns, the main or major motor means E must be disconnected 85 from the carriage. This is done by moving the spring casing 11 downwardly so as to disengage the teeth 8 from the teeth 9. When this is done the drum or reel 5 is 90 supported on a collar 37 on the shaft, as shown in Fig. 5. The downward movement of the spring casing 11 is effected by a key lever 38 of the controlling device I. This lever has pivotally connected to it at 39, 95 Figs. 1 and 2, an upstanding rod that slides in a fixed guide 41. The upper end of the rod is formed into a horizontal fork 42 that engages an annular groove 43 of a wheel 44 that is slidable up and down on a vertical 100 tubular extension 45 on the bottom of the casing 11. The member 44 is one element of a clutch and has teeth 46 adapted to engage corresponding teeth of a companion clutch element 47 rigidly connected with the tubular extension 45. Normally the clutch elements are separated as shown in Fig. 5, but 105 when the wheel 44 is moved downwardly, the clutch elements engage, so that the spring casing 11 cannot turn, and then by moving the member 44 farther downwardly, the teeth 8 and 9 are disengaged so that the reel 5 is free to turn during the return movement of the carriage. Under the member 47 115 is a spring 48 which operates on the tubular member 45 so as to hold the casing 11 normally raised, with the teeth 9 thereof engaged with the teeth 8. On the member 44 are escapement teeth 49 with which engages an escapement 50 pivoted at 51 on the 120 shifter 40. By oscillating the escapement by hand when the key lever 38 is held depressed, it is possible to allow the spring 11 to unwind to any desired extent if the tension is ever found to be too great, and then 125 by adjusting the position of the dogs, the maximum tension will be determined.

The motor means F for returning the carriage includes the reel 6, which has within it a spring 52 which has its outer end con- 130

connected with the reel at 53, and its inner end connected at 54 with the upper end of a vertical shaft 55. This shaft is mounted in a fixed bearing 56 on the machine frame, and on the lower end of the shaft is an escapement wheel 57 and a knob or equivalent device 58. An escapement 59 cooperates with the wheel 57 so that the shaft 55 can be turned to adjust the tension of the spring 52.

The platen feeding device G includes a gear 60 that meshes with the usual toothed rod 61. The gear is turned by means of vertically reciprocatory clutch levers 62 which are pivoted at 63 on a link 64. These levers have downwardly extending arms 65 and are connected by slot and pin connections 66 with a cross head 67 on the upper end of a lifter 70, so that when the latter is raised, the levers are operated so that their upper ends will engage recesses 71 in the opposite faces of the gears 60, and then by further movement of the lifter the levers will operate by a crank connection with the gear to impart to the latter a partial turn, which will turn the toothed rod 61, that in turn partially rotates the platen C, this being effected by gears 72 on the end of the toothed rod 61 meshing with gears 73 that are pressed by springs 74 into engagement with clutch cones 75 keyed to the journals 76 of the platen. The clutch levers 62 are held normally disengaged from the gears 60 by a spring 77 pressing downwardly on the lower fulcrum ends of the levers. The lifter 70 is adapted to be actuated by the pressing of the key lever 38. As shown in Figs. 1 and 11, the lower end of the lifter, which latter is adjustable as to length by including a turnbuckle device 78, has a yoke 79 which carries a pin 80 that passes through a slot 81 in the lever 82, which is connected at 83 with the key lever 38, so that when the latter is depressed, the lever 82 will be actuated to cause the slotted end 81 thereof to move the yoke 79 upwardly to cause the platen C to turn as described. The extent of movement of the lifter 70, and consequently the feed of the platen, is variable by changing the fulcrum 84 of the lever 82. This fulcrum 84 is carried by a slide 85 movable in a guide 86, there being a projection 87 on the slide engageable in any one of a plurality of recesses 88 in the guide 86. A spring 89 presses the slide downwardly to yieldingly maintain the projection 87 in any recess 88. A rod 90 is connected with the slide 85 and extends outwardly through one side of the machine base and terminates in a knob 91, as shown in Fig. 1. The lever 82 has a longitudinal slot 92 for enabling the fulcrum pin 84 to be shifted back and forth. It is desirable to actuate the platen by hand, and for this purpose a key lever 93, Fig. 1, is connected at 94 with a lever 95 which is

fulcrumed at 96 in the machine base, said lever having a slot 97 behind the slot 81 of the lever 82, and the pin 80 of the yoke 79 also passes through the slot 97. By actuating the key lever 93, the lever 95 is tilted so as to operate through the feeding device G to turn the platen. In the normal position of the levers 82 and 95, the pin 80 of the yoke is at the bottom of the slots 81 and 97, and when either lever is actuated, the slotted end is raised so as to carry the pin and yoke upwardly, and the slot of the other lever does not interfere with this movement.

The lifter 70 is guided in a frame 68 which is suitably fastened to the main frame, and a gear wheel 60 is mounted in a frame 69 which is also suitably mounted on the main frame.

From the foregoing description taken in connection with the accompanying drawing, the advantages of the construction and method of operation will be readily understood by those skilled in the art to which the invention appertains, and while we have described the principle of operation, together with the apparatus which we now consider to be the best embodiment thereof, we desire to have it understood that the apparatus shown is merely illustrative and that such changes may be made when desired as fall within the scope of the appended claims.

Having thus described our invention, we claim as new and desire to secure by Letters Patent:

1. A machine of the class described comprising a carriage, a winding drum, a flexible element connected with the carriage and adapted to wind on the drum, a spring drum, said drums being axially movable one with respect to the other, clutch teeth normally connecting the drums to move as a unit, a key-depressed device, a ratchet means operated by the device, a winding spring in the spring drum connected with the ratchet means for winding the spring, a key connected with the axially movable drum for engaging or disengaging the drums, and means for preventing the spring drum from turning when the drums are disengaged.

2. In a machine of the class described, the combination of a carriage, an operating means therefor including a rotatable element, a drum associated with the element and movable axially to engage and disengage the element and drum, a vertical shaft for the drum and element, a spring in the drum, a key-operated mechanism for winding the spring when the keys of the machine are depressed, a key-operated means for moving the drum into and out of engaged position, means on the shaft for supporting the element when the drum is moved therefrom, and a device for locking the drum against rotation when disengaged.

3. In a machine of the class described, the

combination of a carriage, a rotary element for operating the same, a drum, clutch teeth between the drum and element, a vertical shaft on which the drum and element are mounted to move axially, a key for moving the drum axially, means for supporting the element when the drum moves from it, locking means for preventing the drum from turning when disengaged from the said element, a spring in the drum, and means for winding the spring by the depressing of the keys of the machine.

4. In a machine of the class described, the combination of a carriage, a rotary element connected with the carriage for moving the same, a drum disposed under the element, clutch teeth between the drum and element, a spring in the drum, a shaft on which the drum and element are mounted and to which the spring is connected, a key-operated device for turning the shaft to wind the spring, a toothed clutch member connected with the drum, a slidable toothed member normally disengaged from the first-mentioned toothed member, and a key-operated device for moving the second member into engagement with the first member to prevent the drum from turning and for moving the drum out of engagement with the said element.

5. The combination of a carriage, spring means for moving the carriage in one direction, a keyboard, means actuated by the keyboard for keeping the spring means under tension, spring means for returning the carriage, a key-actuated device for disconnecting the first-mentioned spring means from the carriage and permitting the second-mentioned spring means to operate, a platen on the carriage, and means actuated by the key-actuated device for turning the platen.

6. The combination of a carriage, spring means for moving the carriage in one direction, a keyboard, means actuated by the keyboard for keeping the spring means under tension, spring means for returning the carriage, a key-actuated device for disconnecting the first-mentioned spring means from the carriage and permitting the second-mentioned spring means to operate, a platen on the carriage, means actuated by the key-actuated device for turning the platen, and means independent of the last-mentioned means for permitting independent turning of the platen.

7. The combination of a carriage, a platen thereon, a spring motor for moving the carriage in the writing direction, a clutch between the motor and carriage, a keyboard, means actuated by the keyboard to wind the spring of the motor, a key-actuated device for opening the first-mentioned clutch and locking the spring motor from unwinding, a lever connected with the device, and feeding means connected with the platen and connected with the said lever for turning the platen by the movement of the lever.

8. The combination of a carriage, a platen thereon, a spring motor for moving the carriage in the writing direction, a clutch between the motor and carriage, a keyboard, means actuated by the keyboard to wind the spring of the motor, a key-actuated device for opening the first-mentioned clutch and locking the spring motor from unwinding, a lever connected with the device, feeding means connected with the platen and connected with the said lever for turning the platen by the movement of the lever, a second lever, manual means operating the second lever, and slot and pin connections between the levers and the said feeding means.

9. The combination of a carriage, a platen thereon, a spring motor for moving the carriage in the writing direction, a clutch between the motor and carriage, a keyboard, means actuated by the keyboard to wind the spring of the motor, a key-actuated device for opening the first-mentioned clutch and locking the spring motor from unwinding, a lever connected with the device, feeding means connected with the platen and connected with the said lever for turning the platen by the movement of the lever, and an adjustable fulcrum for the said lever.

10. The combination of a carriage, a platen, a relatively fixed gear, a gear on and movable with the carriage and meshing with the first-mentioned gear, clutch levers, a movable member having slot and pin connections with the clutch levers, spring means normally holding the clutch levers disengaged from the first-mentioned gear, and means for actuating the member to move the clutch levers into engagement with the gear and thereafter operating through the clutch levers to turn the gear.

WILLIAM A. HOWELL,
ALVIN I. V. WILSON.