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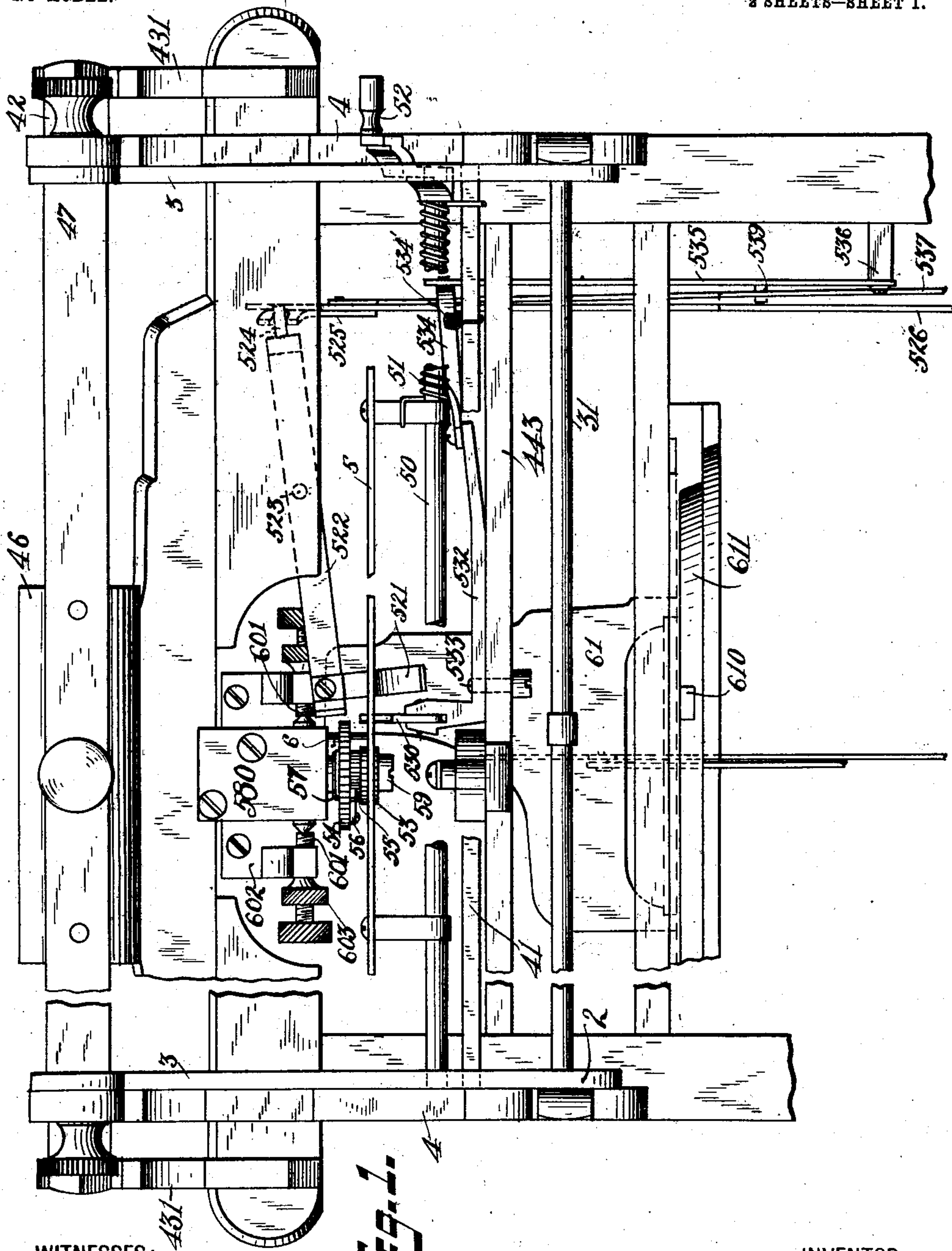
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APPLICATION FILED FEB. 3, 1903.

NO MODEL.

2 SHEETS—SHEET 1.



WITNESSES:

Geo. V. Rasmussen

Robert Allen.

INVENTOR

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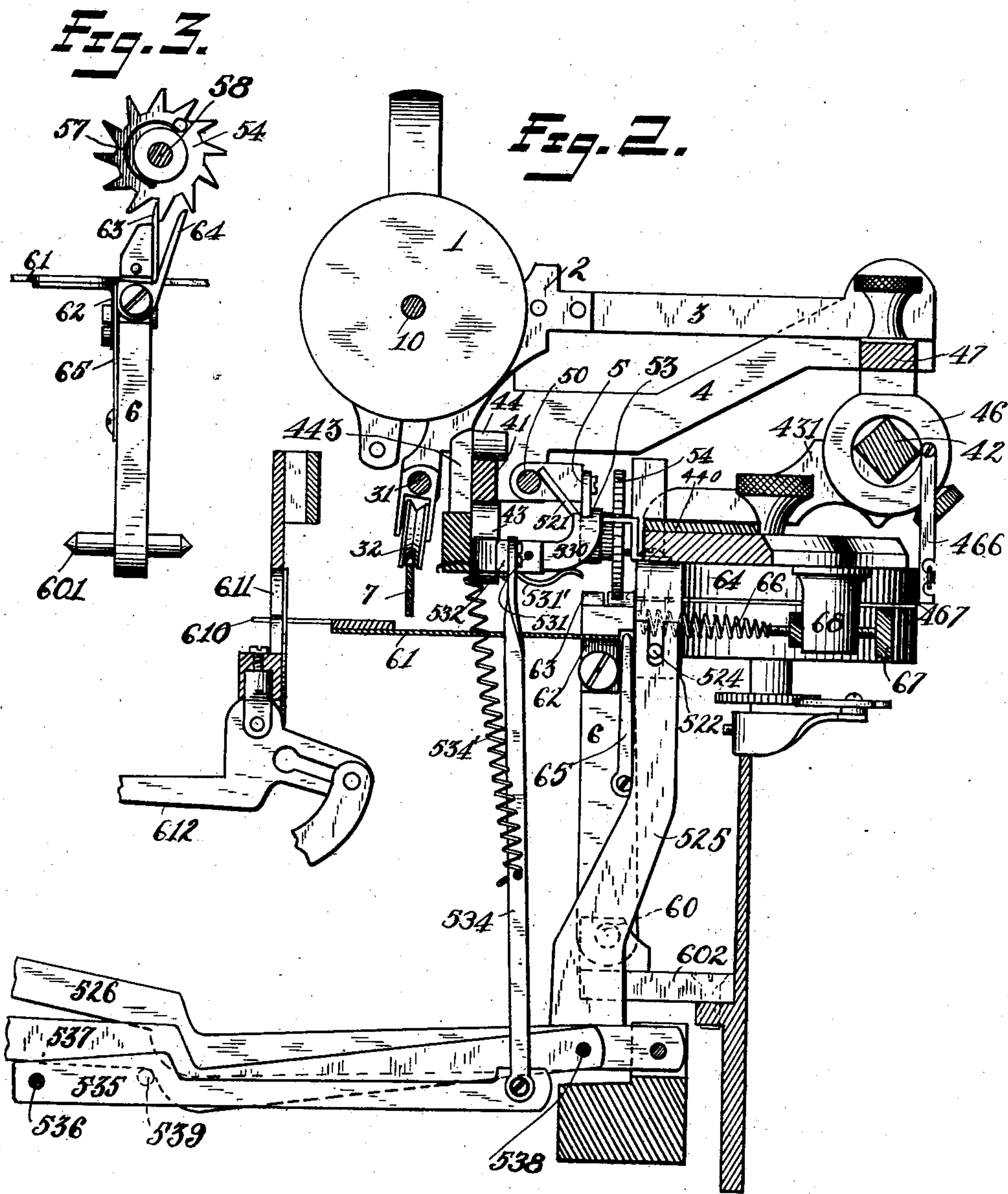
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TYPE-WRITER CARRIAGE-FEEDING MECHANISM.

SPECIFICATION forming part of Letters Patent No. 756,199, dated April 5, 1904.

Original application filed August 2, 1902, Serial No. 118,085. Divided and this application filed February 3, 1903. Serial
No. 141,672. (No model.)

To all whom it may concern:

Be it known that I, JESSE ALEXANDER, a citizen of the United States, residing at Brooklyn, in the county of Kings, State of New York, have invented certain new and useful Improvements in Type - Writer Carriage - Feeding Mechanism, of which the following is a full, clear, and exact description.

My invention relates to improvements in type-writers, and particularly to the carriage-feed mechanism by means of which the carriage may be moved from one side to the other. The carriage, as is usual in machines of this character, has a normal tension giving it an impulse to move from right to left across the machine.

The object of this invention is to construct simple, durable, and efficient mechanism which may be easily operated for governing the movement of the carriage from right to left step by step, for freeing the carriage so that it may be moved from one side to the other or automatically from right to left, and for moving the carriage step by step from left to right by a key-operated means.

The invention consists in providing the carriage construction with a suitable pivoted toothed plate or rack for engagement with or disengaging from the mechanism for controlling the movement of the carriage. A suitable tensional device is provided to normally give the carriage an impulse from right to left. This particular machine is so constructed that the line of writing appears before the operator without the necessity of lifting, tilting, or rotating the platen. A universal bar, controlled by the movement of a suitable type-bar and spacer mechanism, has a substantially longitudinal movement in a horizontal plane and controls directly an escapement-dog, which engages with the teeth of one of the escapement-gears. Another of the escapement-gears engages with the teeth of the carriage-rack. A pawl is also provided suitably mounted in the frame of the machine for engagement with the teeth of the rack when desired to move the carriage step by step from left to right.

The carriage-rack is so mounted that it may be manually withdrawn from the escapement mechanism, so as to be moved from side to side freely, or it may be thrown out of engagement by a key-operated means to permit the carriage to automatically move from right to left. As will be more fully understood on reading the following specification and the accompanying drawings, these parts will be found so constructed and relatively disposed as not only in no wise to interfere with one another, but also to cooperate to the same end—viz., a complete control of the carriage movements. The other parts of this machine are more fully set forth and claimed in my application, Serial No. 118,085, filed August 2, 1902, from which this is a division.

Figure 1 is a plan view of those parts of a type-writer which embody the improvements of this invention, parts being broken away for convenience in illustration. Fig. 2 is a cross-section and side elevation of the same. Fig. 3 is a rear elevation of the escapement-dog and ratchet.

The platen 1, which is carried by shaft 10, mounted in the side plates 2 2 of the carriage structure, is rotatable, and, together with the carriage structure, longitudinally movable.

3 3 are side frames which carry the plates 2 2 and are themselves pivotally connected to the carriage-frames 4 4. At the front these carriage-frames 4 4 are guided by the rod 41 and at the rear by the bar 47. The front rod is guided by the rollers 43 and 44, carried by the frame 443 of the machine. The rear guide-rail 42 is carried by the supports 431 431, each of which is supported on a plate 440, extending above the body of the machine and toward the center.

46 is a sleeve which surrounds and is adapted to slide longitudinally upon the rear guide-rail 42.

47 is a bar which connects the two side frames 4 4 of the carriage and is secured to the sleeve 46.

31 is a rod carried by the side plates 3 3. By this rod is carried the roller 32, which

serves as one member of the platen-shifting mechanism, which is claimed in the original application before referred to.

466 is a bar which is carried by the sleeve 5 46 and projects downward therefrom for engagement with any suitable band to cooperate with the tension-drum 467. The carriage is thus given a normal impulse from right to left of the machine, as is usual in machines of 10 this general character.

5 is a toothed plate or rack which is carried by the carriage structure and pivotally mounted by means of the shaft 50.

51 is a spring which normally holds the rack 15 5 down in the position shown in Fig. 2 for engagement with the escapement mechanism.

52 is a handle by means of which the rack may be tilted backward to release it from the escapement mechanism in order that the carriage may be moved freely from side to side 20 by hand.

6 is an escapement-dog pivoted at 60.

601 601 are adjustable pivotal bearings for the shaft 60, which operate in lugs projecting 25 upward from the plate 602, which in turn is fastened to the frame of the machine.

The dog-arm 6 is pivotally connected to the universal bar 61 by means of the lug 62. The universal bar 61 is supported at the forward 30 end by the end 610, projecting through a slot in the type-bar plate 611. The movement of a type-bar 612 will cause the universal bar 61 to reciprocate in a substantially horizontal plane, since it is guided at the front end and 35 pivotally supported at the rear end.

63 is a rigid tooth of the dog 6, and 64 is a pivoted tooth which has a blade-spring 65 for pressing it away from the dog 6, as shown in Fig. 3.

40 66 is a spring which normally holds the dog-arm 6 in its forward position.

67 is an adjusting-screw working in the stationary post 68 for effecting the changes in the tension of the spring 66, so as to control 45 the touch of the machine.

The toothed rack 5 is situated so as to engage when in its lower normal position with the teeth of the gear 53. This gear 53 is mounted on the same shaft 58 with a ratchet-wheel 54, which is adapted to coact with the teeth of the escapement-dog 6. The shaft 58 is the form of a screw-post, having the head 59, by means of which it may be set into the plate 580. This plate 580 may be secured by 55 screw to the machine. When the universal bar is operated in the usual manner, either by the type-bar mechanism or by the spacer-bar, the dog-arm 6 is moved to the rear, so that the spring-pressed pivoted tooth 64 is slipped from engagement with the tooth of the ratchet 54 and the relatively rigid tooth 63 slips in to take its place. The release of the universal bar, and consequently the return of the dog-arm 6 by means of the spring 66, causes the 65 rigid tooth 63 to be released. At this instant

the spring-pressed tooth 64 is standing away from the dog-arm 6, as seen in Fig. 3, so that as the carriage is moved from right to left under the impulse of the tensional device the ratchet 54 will be rotated through the medium 70 of the rack 5. In this way the following tooth of the ratchet 54 will be brought into engagement with the pivoted dog-tooth 64 and bring this to a stop against the end of the dog-arm 6. The carriage will then have been 75 moved through the space of one tooth of the rack corresponding to one ratchet-tooth. It will thus be seen that the release action of the dog to permit the feeding of the carriage from right to left of the machine is accomplished in 80 a very simple manner and directly from the universal bar. The escapement-dog and ratchet limit or prevent movement of the carriage except as herein described.

It has already been noted that the carriage 85 mechanism may be moved freely by hand from either side to the other of the machine by simply tipping the handle 52, so as to release the rack 5. A similar effect may be obtained for allowing the carriage to automatically 90 move from right to left by means of the arm 521, which is carried by the lever 522, pivoted at 523. The pin 524, carried by the right-hand end of this lever 522, is adapted to be engaged by the slotted end of the arm 525, 95 connected to the key-bar 526. When, therefore, the key 526 is depressed from its normal position, the cam-face of the arm 521 will be moved to the rear, and thus lift the rack 5 from the teeth of the gear 53. The movement 100 of the carriage from right to left under the impulse of the tension will obviously continue until the key 528 is released or the carriage is otherwise brought to a stop. When the carriage is to be moved from left to right by 105 hand without releasing the rack, it is desirable that it may be effected with as little wear of the ratchet-teeth as possible. For this reason I have formed the gear 53 separate from the ratchet 54. An intermediate gear of the gear 110 53 is formed with teeth projecting in the same direction as the ratchet-teeth 54 and adapted to coact with the pawl 56, which is hinged to and carried by the ratchet 54.

57 is a spring for holding the pawl 56 in en- 115 gagement with the teeth of the reverse ratchet 55. It will thus be seen that the normal action of the ratchet or in feeding from right to left the tangential force exerted upon wheel 53 by the rack 5 and carriage parts is transmitted by means of the pawl 56 directly to 120 the ratchet 54 and thence to the dog 6. When the carriage is moved in the opposite direction, the teeth of the rack 5 cause the wheel 53 to revolve in the opposite direction, but 125 free from the ratchet 54, since the teeth of the reverse ratchet 55 revolve easily beneath the pawl 56, the resistance of the spring 57 for holding the pawl 56 being much less than that required of the blade-spring 65, which coop- 130

erates with the pivoted tooth 64 of the dog. The movement from left to right of the machine may be effected from the keyboard step by step, as desired, for purposes of correction or insertion, &c. The pawl 530 is pivoted at 531 to lever 532. The lever is in turn pivoted at 533 to the frame 443 of the machine and connected, by means of the link 534, to a bar 535, pivoted at 536 toward the front of the machine.

537 is a key-bar which is pivoted at 538 to the bar 526 for convenience in mounting and is adapted to engage with the pin or projection 539, carried by the bar 535. Normally the pawl 530 remains in the lower position, so as to be free from the rack 5. The depression of the key-bar 537 by coacting with the pin 539 will cause the depression of the right-hand end of the lever 532 and a consequent lifting up of the pawl 530 and the movement of it toward the right. This will bring the pawl 530 into engagement with the teeth of the rack 5, and thus cause the carriage to be moved backward from left to right through a corresponding distance. In the construction herein shown this distance is meant to correspond with that necessary to move the carriage through the space of one tooth. Obviously it might be made for a plurality of teeth by simply varying the proportions and relative positions of the lever 532 and the rack 5. When the key-bar 537 is released, the spring 534' will bring the lever 532 and connected parts back to their original position. On returning to this position the operative edge of the pawl 530 should be allowed to pass easily beneath the rack 5 and yet be in position when desired for operation. To perfect this, I have pivoted the pawl 530 at 531 to the lever 532 and provided a blade-spring 531', so that the pawl may be depressed and yet brought back to its operative position when freed.

The construction of the carriage-feed mechanism will be found to be simple and efficient in its operation and so proportioned and located as to be easily operated for the purpose of moving the carriage from side to side of the machine either step by step by the operation of the type-bar mechanism, freely by hand in either direction, or with but slight friction by hand from left to right, automatically from right to left by means of a key-bar, and step by step from left to right by means of a key-bar. The advantages of such a construction are obvious. All of the parts are so constructed and located relatively to one another as to coöperate without interference and unnecessary duplication of parts.

What I claim is—

1. In a type-writing machine, a carriage mechanism including a platen, a carriage therefor, means for controlling the longitudinal movement of said platen and carriage consisting of a toothed rack carried by said carriage,

a gear-wheel in engagement with said rack, a ratchet-wheel mounted with said gear-wheel, a dog for engagement with said ratchet-wheel, said dog being carried by a vertical pivoted arm and a horizontal universal bar pivoted to said arm at the top and adapted to operate said dog.

2. In a type-writing machine, a carriage mechanism including a platen, a carriage therefor, means for controlling the longitudinal movement of said platen and carriage consisting of a toothed rack carried by said carriage, a gear-wheel in engagement with said rack, a ratchet-wheel mounted with said gear-wheel, a pawl carried by said ratchet-wheel and engaging with a portion of said gear-wheel, a dog for engagement with said ratchet-wheel, said dog being carried by a pivoted arm, a universal bar pivoted to said arm and adapted to operate said dog, a spring pressing against said arm and an adjusting-screw therefor mounted in a stationary part of the machine at the rear.

3. In a type-writing machine, a carriage mechanism including a platen, a carriage therefor, means for controlling the longitudinal movement of said platen and carriage consisting of a toothed rack carried by said carriage, a gear-wheel in engagement with said rack, a ratchet-wheel mounted with said gear-wheel, a pawl carried by said ratchet-wheel and adapted to engage with a portion of said gear-wheel, a dog for engagement with said ratchet-wheel, said dog being carried by a pivoted arm and comprising a rigid tooth and a spring-pressed pivoted tooth normally held in line with the rigid tooth by the tension of the carriage.

4. In a type-writing machine, a carriage mechanism consisting of a platen, a carriage therefor, means for moving said platen from right to left, means for limiting said movement and means for moving said carriage from left to right step by step consisting of a rack carried by said carriage, a pivoted pawl having its axis parallel to the rack and adapted to engage said rack, a pivoted lever carrying said pawl and a key-bar for controlling the same, and a spring for engaging said pawl so that it may yield slightly when released by the key-bar.

5. In a type-writing machine, a carriage mechanism consisting of a platen, a carriage therefor, means for moving said carriage longitudinally, a ratchet-wheel for limiting said movements, a rack carried by the said carriage and controlled by said ratchet-wheel and independent means for disengaging said rack and wheel consisting of a lever pivotally mounted in a horizontal plane for lifting said rack and causing a frictional resistance to the subsequent longitudinal movement of the rack.

6. In a type-writer machine, a carriage mechanism consisting of a platen, a carriage

therefor, means for moving said carriage longitudinally, a ratchet-wheel for limiting said movements, a rack carried by the said carriage and controlled by said ratchet-wheel and
 5 means for disengaging said rack and wheel consisting of a lever pivotally mounted in a horizontal plane for slidably engaging and lifting said rack, a key-bar and an arm projecting upward therefrom and connected di-
 10 rectly to said lever.

7. A carriage-feeding mechanism for a type-writer including a longitudinally-movable rack, a lever pivoted to the frame of the machine on a horizontal axis, a spring-pressed
 15 pawl pivoted to one end of said lever on an axis parallel to the rack and adapted to engage the teeth of said rack, a key-bar for operating said lever, a link connecting the same, and a spring for normally holding said lever
 20 so that said pawl is disengaged from the teeth of said rack.

8. In a carriage-feeding mechanism for a type-writer, a longitudinally-movable rack, a yieldingly mounted and pivoted pawl for engagement therewith, a key-bar pivoted near
 25 the rear of the machine, an intermediate bar pivoted toward the front of the machine, a link connected to the end of said intermediate bar for operating said pawl, and a projection
 30 from one of said bars against which the other bar rests, whereby on the depression of the key-bar said pawl may be operated.

9. In a feeding mechanism for a type-writer, a rack longitudinally movable with the carriage, an escapement mechanism for limiting
 35 the movement of said rack, a lever pivoted to the stationary frame of the machine having a cam-faced extension for lifting said rack and causing a drag, and key-operated means for
 40 moving said lever whereby said rack may be withdrawn from engagement with the escapement mechanism.

10. In a feeding mechanism for a type-writer, a rack longitudinally movable with the carriage, an escapement mechanism for limiting
 45 the movement of said rack, a lever having a cam-faced extension for lifting said rack, a vertical pivot for said lever, a pivoted key-bar, an upwardly-extending arm therefrom
 50 having a slot engaging with one end of said lever whereby on the depression of the key-bar the rack will be disengaged from the escapement mechanism.

11. In a feeding mechanism for a type-writer, a rack longitudinally movable with the carriage, an escapement mechanism for limiting
 55 the movement of said rack, a lever having

a cam-faced extension for lifting said rack, a pivoted key-bar, an upwardly-extending arm therefrom engaging with one end of said lever
 60 whereby on the depression of the key-bar the rack will be disengaged from the escapement mechanism, a pawl normally out of engagement with said rack and adapted to engage
 65 therewith, a key-bar for operating said pawl said key-bar being pivoted to the first-mentioned key-bar.

12. In a feeding mechanism for a type-writer, a rack longitudinally movable with the carriage, an escapement mechanism for limiting
 70 the movement of said rack, a lever having a cam-faced extension for lifting said rack, a pivoted key-bar, an upwardly-extending arm therefrom engaging with one end of said lever
 75 whereby on the depression of the key-bar the rack will be disengaged from the escapement mechanism, a pawl normally out of engagement with said rack and adapted to engage
 80 therewith, a key-bar for operating said pawl said key-bar being pivoted to the first-mentioned key-bar, and an intermediate bar pivoted toward the front of the machine and extending backward adapted to be engaged by
 the second key-bar for operating said pawl.

13. In a carriage-feeding mechanism for a type-writer, a rack, an escapement mechanism comprising a rotatable gear, a ratchet mounted concentrically therewith, a second ratchet
 85 movable with said gear, a pawl pivoted to said first ratchet and engaging with the second ratchet, and a spring passing through a recess in the first ratchet for holding said pawl lightly
 90 in engagement with the teeth of said second ratchet.

14. In a carriage-feeding mechanism for a type-writer, a rack, an escapement mechanism comprising a rotatable gear, a ratchet mounted concentrically therewith, a second ratchet secured to and movable with said gear, a pawl
 95 pivoted to said first ratchet and engaging with the second ratchet, and a spring for holding said pawl lightly in engagement with the teeth of said second ratchet, and an escapement-dog adapted to engage with said first ratchet said
 100 dog having a rigid tooth and a pivoted and spring-pressed tooth, the tension of the springs operating said pawl and said tooth being relatively such that the said pawl will yield more readily than the tooth.
 105

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Witnesses:

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