(No Model.) 2 Sheets—Sheet 1.

J. F. McLAUGHLIN.

TYPE WRITING MACHINE.

No. 421,837. Patented Feb. 18, 1890.

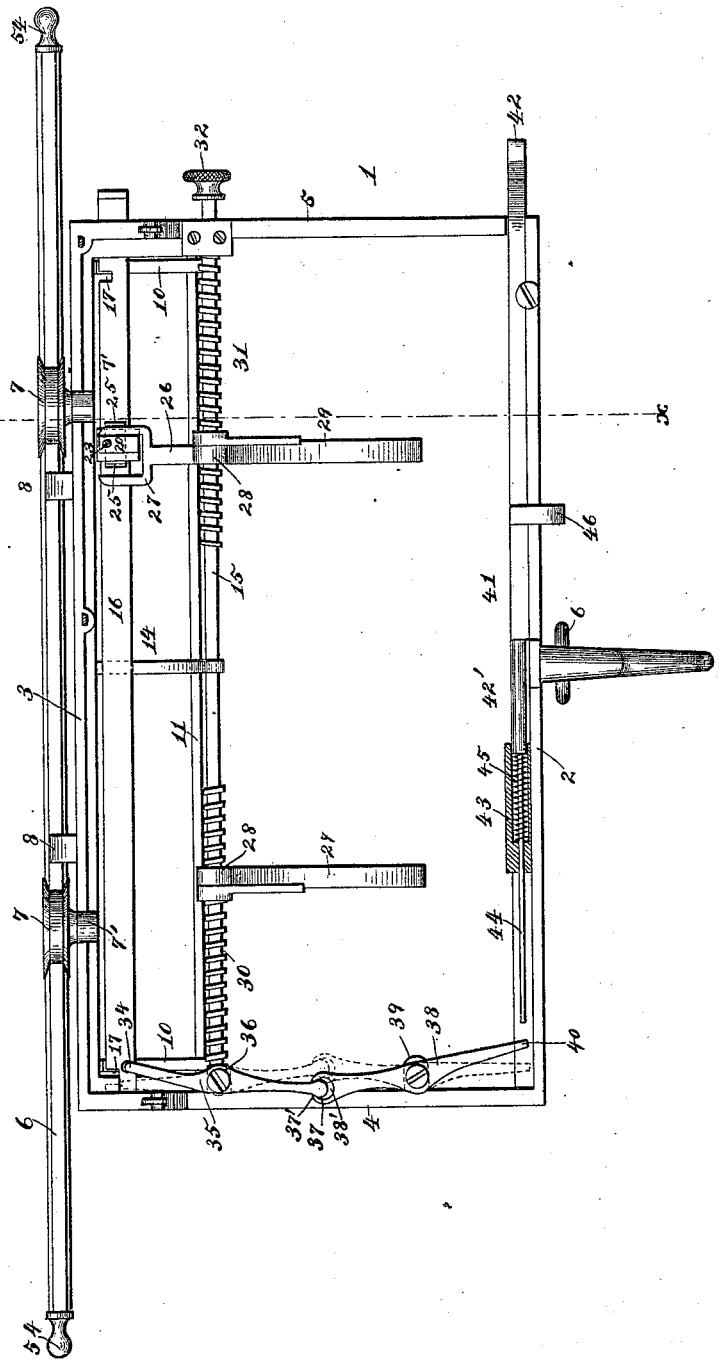

Fig. 1.

WITNESSES:

Percy C. Bowen.

F. F. Chapman.

INVENTOR

James F. McLaughlin,

By Joseph Lyons.

Attorney

N. PETERS, Photo-Lithographer, Washington, D. C.

(No Model.) 2 Sheets—Sheet 2.

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Fig. 2.

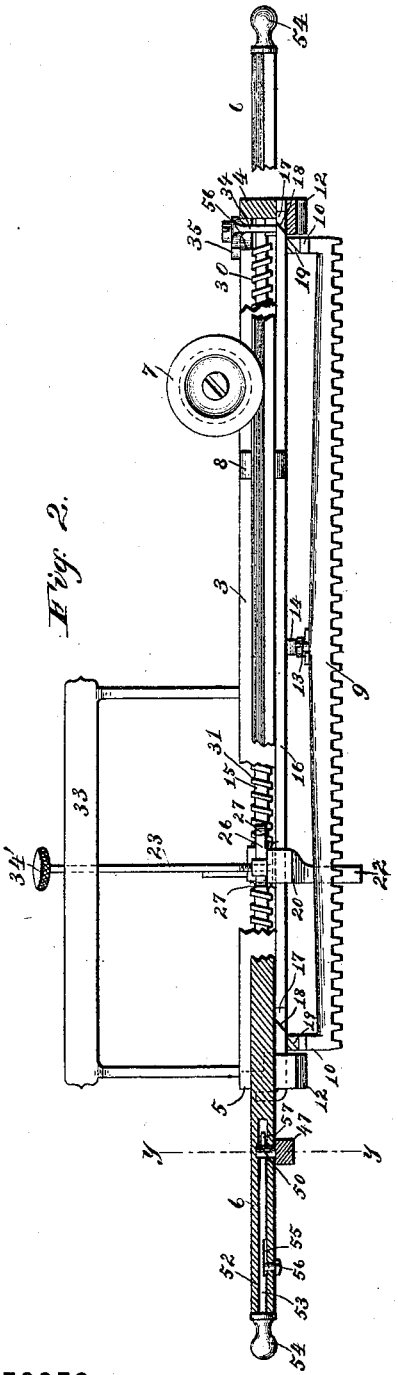


Fig. 4.

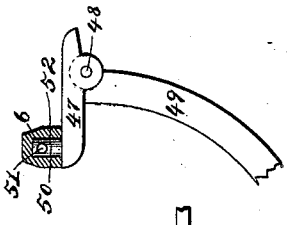


Fig. 5.

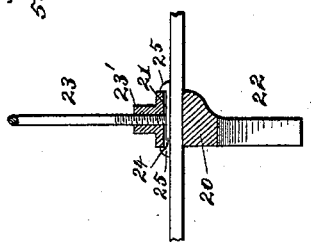


Fig. 3.

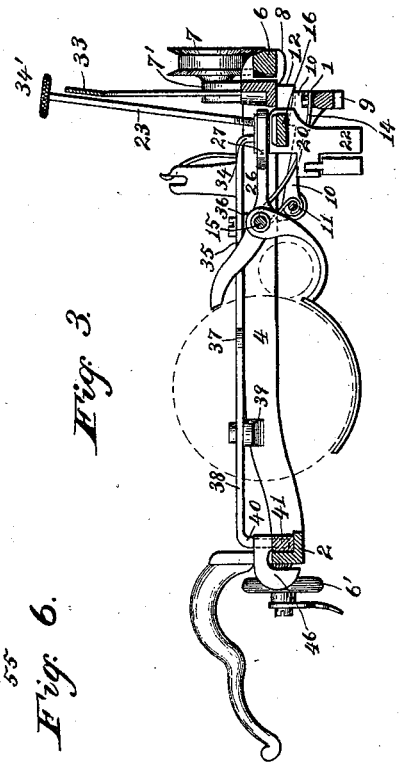
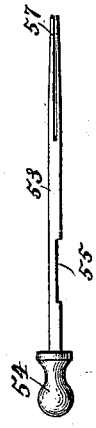


Fig. 6.



WITNESSES:

Percy C. Bowen

F. T. Chapman

INVENTOR

James F. McLaughlin,

By Joseph Lyons

Attorney

N. PETERS, Photo-Lithographer, Washington, D. C.

UNITED STATES PATENT OFFICE.

JAMES F. McLAUGHLIN, OF PHILADELPHIA, PENNSYLVANIA.

TYPE-WRITING MACHINE.

SPECIFICATION forming part of Letters Patent No. 421,837, dated February 18, 1890.

Application filed February 18, 1889. Serial No. 300,254. (No model.)

To all whom it may concern:

Be it known that I, JAMES F. McLAUGHLIN, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Type-Writing Machines, of which the following is a specification.

This invention has relation to that class of type-writing machines in which a traveling carriage supporting the impression-cylinder is fed forward the space of one letter after each imprint of a type upon the paper, or upon the depression of a specially-provided letter-spacing key; and its special object is to provide a novel means for causing the carriage to be automatically returned to its starting-point when the end of a line of printing or writing has been reached.

In an application filed by me June 5, 1888, Serial No. 276,151, and in another application filed September 19, 1888, Serial No. 285,819, I have shown and described automatic reverse movements for the carriage of a type-writer, and the invention herein shown and described is an improvement on the same, the specific points of novelty of which will clearly appear from the following detailed description with reference to the accompanying drawings, which form a part hereof, and in which—

Figure 1 is a plan view of the frame of a type-writer carriage embodying my improvements, and showing only so much of the carriage as is necessary to illustrate the invention. Fig. 2 is a rear elevation of the carriage with parts broken away and in section. Fig. 3 is a transverse section taken on the line $x\ x$ in Fig. 1. Fig. 4 is a detail view of the supporting-rod and one of its sustaining-brackets, the rod being shown in section on the line $y\ y$ of Fig. 2. Fig. 5 is a detail sectional view of the movable casting in position on the rear sliding bar, and Fig. 6 is a detail view of one of the pins for securing the supporting-rod on its brackets.

Like numerals of reference indicate corresponding parts in all the figures of the drawings.

The frame 1 of the carriage is rectangular in shape, being composed of the front and rear bars 2 and 3 and the side bars 4 and 5, and constructed essentially the same as shown and described in my aforesaid applications. The carriage is supported at the front by an anti-friction roller 6′, journaled to the front bar 2 about midway of its length and arranged in a manner well understood by those skilled in the art to which this invention relates, to travel on a track on the main frame of the type-writer. At the rear the carriage is supported on a track or rod 6 by means of anti-friction flanged rollers 7 7, journaled on screws, as shown, entering bearing-blocks 7′ 7′, erected on the rear bar 3 near each end thereof.

To prevent the accidental removal of the carriage from the rod 6, I provide yoke-shaped brackets 8 8, projecting rearward from the rear bar 3 and embracing the rod 6, as shown in Fig. 3—that is, the brackets extend above and below the rod 6, in proximity thereto, and prevent vertical displacement of the carriage, while the flanges on the rollers 7 7, it will be seen, prevent lateral displacement of the carriage. It will also be seen that if otherwise unobstructed the brackets 8 8 and rollers 7 7 in no wise interfere with the longitudinal movement of the carriage on the rod 6.

The carriage is provided with a rack-bar 9, forming an integral part of a rack-bar frame, which is rectangular in shape and composed of the said rack-bar, end pieces 10 10, projecting from the ends of the rack-bar, and a rod 11, which extends through the free ends of the pieces 10 10 and has its projecting portions journaled in bearings formed in brackets 12 12, secured to the under side of the end bars 4 5 of the carriage-frame.

On the upper side of the rack-bar 9 is a screw 13, and the notched or bifurcated end of a flat spring 14 is arranged to straddle the shank of this screw between its head and the top of the rack-bar. The spring passes over a screw-rod 15, (the purpose of which will be hereinafter indicated,) and from thence under the rod 11. The tendency of this spring is to lift the rack-bar by turning the frame on its axis—that is, to move it on the axis formed by the rod 11.

The brackets 12 12 are recessed on their upper surfaces, as indicated in Fig. 2, to form bearings between the brackets and the under surfaces of the end bars 4 5 for a sliding bar

16, located at the rear of the carriage, and which I therefore designate the "rear sliding bar." This bar 16 has formed in it, near each end, a notch or recess 17, with one side inclined or beveled, making the recess flaring from the upper face of the bar downwardly, as shown at 18, and beyond the recesses 17 the said bar passes into the recesses in the brackets 12 12 and is supported thereby, but is free to move longitudinally in said recesses if otherwise unobstructed.

Each end piece 10 10 of the rack-bar frame has raised on its upper surface a beveled lug or tooth 19, with the inclination of the beveled face at the same angle as the inclined side 18 of the corresponding recess 17. These lugs are in line with the recesses 17 and rest normally against the under side of the bar 16, being held thereto by the action of the spring 14 exerted on the rack-bar frame. Now it will be seen that if the bar 16 is moved longitudinally until the recesses 17 are over the lugs 19, as shown in Fig. 1, the latter will enter the said recesses and the rack-bar 9 will be lifted by the action of the spring 14, and if the bar 16 be then moved in the contrary direction the inclined sides of the recesses 17 will engage and ride over the inclined or beveled faces of the lugs 19 and force the rack-bar frame downward against the action of the spring until the lugs bear on the under surface of the rear sliding bar 16, as shown in Fig. 2. These constructions, together with their operation and purposes, are fully set forth in my former application, Serial No. 285,819.

Mounted upon the rear sliding bar 16 is a casting 20, provided with a lateral slot 21, for the passage of the said bar, and with a downwardly-projecting tail-piece 22, arranged as in my said former applications, to make contact with a fixed lug (not shown) on the main frame of the type-writer and in the line of the travel of the said tail-piece as it moves along with the carriage. The casting 20 carries a screw-rod 23, which passes through a nut 23′ on the upper part of the casting above the slot, and enters the latter, where it bears on a movable jaw or follower 24, located within the slot and held therein by its upturned ends 25, arranged to embrace the sides of the casting. The casting is adjusted along the rod by means of an arm 26, formed on and projecting from a boss 28 of one of two paper-guides 29 29, and provided with a forked end 27, constructed to embrace the casting 20, but with the forks a sufficient distance apart to allow the casting to remain relatively fixed, while the carriage with the arm 26 may move a limited distance, as will hereinafter appear. The guides 29 are adjustable, as described in my former applications, by means of right-and-left-handed screws 30 31 on the rod 15 and passing through nuts formed in the bosses 28. The rod 15 is journaled in the side bars 4 5 and extends beyond the bar 5, where it is provided with a milled head 32, by means of which it may be rotated. It will now be understood that by rotating the rod 15 the paper-guides 29 will be adjusted toward or moved from each other, and simultaneously with such adjustment the casting will be moved along the bar 16. When at the desired point, the casting is clamped to the bar 16 by manipulating the screw-rod 23 to force the follower 24 into frictional contact with the said bar. The rod 23 is continued upward in front of and above the scale-frame 33, and is provided with a milled head 34′, by means of which it may be manipulated, as described. The screw-rod 23, it will be seen, serves as a pointer or indicator for the scale.

The casting, as in my former applications, is for the purpose of determining the end of the line and is adjusted on the bar to the desired point on the scale to fix the length of line to be printed, and is then clamped to the bar; but while in my former machine the casting had to be adjusted independently of the paper-guides the adjustment of the latter in my present improvement also adjusts the casting to the required position. This is an advantage, since it obviates the necessity of adjustment of two parts independently, which in ordinary use should always have an approximate relative position, the end of a line of printing being preferably a certain distance from the edge of the paper, whatever the width of the same may be.

The end of the rear sliding bar 16 adjacent to the side bar 4 receives the downwardly-projecting end 34 of a lever 35, centrally pivoted by a screw or other suitable means to a lug 36, projecting inward from the side bar 4 of the carriage. The other end of the lever 35 is connected by a knuckle-joint 37 with another lever 38, centrally pivoted to a lug 39, projecting from the side bar 4. The joint 37 may be a ball-and-socket joint with a limited longitudinal play to permit the joined ends of the levers to pass to either side of the central line, or any other suitable joint may be used. By preference I use the knuckle-joint construction shown in Fig. 1, where the lever 35 terminates with a circular head 37′ and the corresponding end of lever 38 with a circular recess 38′, which is of greater diameter than the head 37′, which it receives. The lever 38 has its other or free end turned downward to form a finger 40 (indicated in Fig. 3) in the line of travel of a sliding bar 41, mounted on the front bar 2 of the carriage-frame, and which I therefore designate the "front sliding bar." This bar 41 is movable longitudinally on the inner side of the front bar 2 and passes through a bearing in the side bar 5. It is provided beyond the side bar 5 with a head 42 to operate the line-spacing mechanism; but neither the construction of the head nor the said line-spacing mechanism is shown or described in this application, as they form no part of this invention and are fully shown and described in my former ap-

plications. The bar 41 may be rectangular in shape for a portion of its length, and is then reduced to a cylindrical form, as shown at 42′, to enter a sleeve 43, fixed on the front bar 2. Beyond this cylindrical portion 42′ the bar 41 is still further reduced for the remainder of its length, as shown at 44, which reduced portion extends through and beyond the end of the sleeve 43. The part 44 of the bar is of sufficient length to extend normally within a short distance of the finger 40 of the lever 38, and is surrounded within the sleeve 43 by a helical spring 45, abutting against the end of the sleeve and the cylindrical portion 42′ of the bar, respectively. The rectangular part of the bar 41 is provided with a hook-shaped lug 46, projecting over the front bar 2, and arranged to come in contact with a stop (not shown) on the main frame of the type-writer when the carriage moves toward the right. Assuming that the casting 20 has been adjusted as desired and clamped to the bar 16, then as the carriage is moved forward by the feed mechanism engaging the rack-bar 9 and operated through suitable intermediate mechanism from the type-levers—such, for instance, as shown in my former applications, and therefore not shown herein—the tail-piece 22 of the casting will be brought into contact with the fixed lug on the main frame, hereinbefore referred to. This lug holds the casting and the bar 16, to which it is attached, against further movement while the carriage is still fed forward. This travel of the carriage continues until the beveled or prismatic lugs 19 on the end pieces 10 of the rack-bar frame are brought under the recesses 17 in the sliding bar 16, when the said rack-bar frame will be turned on its axis by the spring 14 forcing the lugs 19 into the recesses 17 and lifting the rack-bar from the feed mechanism. The carriage on being released from the feed mechanism is immediately returned to its normal position—that is, to the beginning of a line—by any suitable mechanism—such, for instance, as the barrel-spring shown and described in my former application, Serial No. 285,819. Before the return movement of the carriage is completed the lug 46 on the front sliding bar 41 comes in contact with the fixed stop in its path, and the said bar is held against further movement while the carriage continues its retrograde travel. The spring 45 is thereby compressed between the end of the sleeve 43 and the cylindrical portion 42′ of the bar 41 and the portion 44 of the bar is brought into contact with the finger 40. The outer ends of the levers 35 38, it will be seen, and consequently the rear sliding bar 16, will thus be held stationary during the remainder of the retrograde movement of the carriage, while the pivots of the levers and their knuckle-joined ends will move with the carriage until these levers assume the relative position shown in dotted lines in Fig. 1. The rear sliding bar 16 being held stationary, it will be seen that as the carriage carries the rack-bar frame along with it during its return movement the lugs 19 will eventually be forced down the inclined sides 18 until they bear on the under side of the bar 16, thus depressing the rack-bar frame against the action of the spring 14 and again bringing the rack-bar into operative connection with the feed mechanism. When the carriage is again moved forward, the bar 41 is returned to its normal position by the recoil of the spring 45. On the retrograde movement of the carriage the head 42 of the bar 41 will operate the line-spacing mechanism, as fully shown and described in my former application, Serial No. 285,819, which for the purposes of this case need not be considered.

It will be seen from the foregoing description that I effect the re-engagement of the rack-bar with the feed mechanism by intermediate devices between the front and rear sliding bars, that have a positive and direct action in the plane of movement of the carriage, requiring but little power to operate them, while in my former machine these intermediate devices were operated by cam mechanism which was indirect in its action and partly in a plane at right angles to the movement of the carriage, and required much more power than the devices shown in the present application. The track or rod 6 is mounted near each end on brackets 47, each hinged near one end, as shown at 48, Fig. 4, to a post 49 or other support fixed to the main frame.

In order that the carriage may be quickly and readily removed from the main frame, I provide each bracket 47, near its free end, with an upwardly-projecting stud 50, having near the top an orifice or hole 51, as shown in Fig. 4. Each stud 50 passes into a hole or recess in the track or rod 6 and intersects a central passage 52, extending from the end of the said rod to a point a short distance beyond said point of intersection by the stud. Within each passage 52, I insert a pin 53, provided with a head 54, by which it may be manipulated. This pin has formed in one side a recess 55, into which extends the end of a screw 56, passing through the side of the said rod 6, and which, it will be understood, acts as a stop to limit the longitudinal movement of the pin and prevents its accidental removal from the rod. Each pin has a tapering end 57, to pass through the holes 51 in the studs 50, and thus the two pins lock the rod 6 to the brackets 47. The tapering ends of the pins may be split, as shown in Fig. 6, to insure the frictional contact of the pins and studs and prevent the pins from becoming loose from wear. Thus the carriage is held to the main frame by the pins 53 locking the track to the frame of the machine, and by withdrawing the pins from the studs the carriage and its track or rod may be lifted from the brackets 47 and removed from the machine.

Having now fully described my invention,

and without limiting myself to the precise construction shown, I claim and desire to secure by Letters Patent—

1. In a type-writer having a carriage-feed and automatic return mechanism, the combination of a rack-bar mounted upon the carriage and actuated by the said feed mechanism, with two sliding bars for throwing the rack-bar into and out of gear with the carriage-feed mechanism, and a system of jointed levers in operative relation to both sliding bars, substantially as described.

2. In a type-writer having a carriage-feed and automatic return mechanism, the combination of a rack-bar mounted upon the carriage and actuated by the said feed mechanism, with two sliding bars for throwing the rack-bar into and out of gear with the carriage-feed mechanism, and a system of jointed levers in operative relation to both sliding bars and movable in the plane of the travel of the carriage, substantially as described.

3. In a type-writer having a carriage-feed and automatic return mechanism, the combination of a rack-bar mounted upon the carriage and actuated by the said feed mechananism, with two sliding bars for throwing the rack-bar into and out of gear with the carriage-feed mechanism, and two jointed levers, one in positive engagement with one sliding bar and the other with its free end in operative relation to one end of the other sliding bar, substantially as described.

4. In a type-writer having a carriage-feed and automatic return mechanism, and a rack-bar upon the carriage actuated by said feed mechanism, the combination of a sliding bar controlling the movement of the said rack-bar into and out of gear with the feed mechanism, a casting adjustable on said sliding bar for shifting the bar on the carriage at the end of a line of printing, and an adjustable paper-guide on the carriage connected to the casting to effect its adjustment simultaneously with that of the paper-guide, substantially as described.

5. In a type-writer having a carriage-feed and automatic return mechanism, and a rack-bar upon the carriage actuated by said feed mechanism, the combination of a sliding bar controlling the movement of the rack-bar into and out of gear with the feed mechanism, a casting adjustable on the sliding bar and arranged to shift the bar on the carriage as the latter is fed forward and approaches the end of a line of printing, with an adjustable paper-guide on the carriage and connections between the guide and casting constructed to move the latter simultaneously with the adjustment of the paper-guide and admit of a limited independent movement of the casting, substantially as described.

6. In a type-writer having a carriage-feed and automatic return mechanism, and a rack-bar upon the carriage actuated by the said feed mechanism, the combination of a sliding bar controlling the movement of the rack-bar into and out of gear with the feed mechanism, with a fixed scale-frame adjacent to the bar, and a casting adjustable on the bar and arranged to shift the bar on the carriage as the lattter is fed forward and having a clamp-screw with a stem extended upward in front of the scale-frame to serve as an indicator or pointer therefor, substantially as described.

7. In a type-writer, the combination, with the main frame, of a carriage, a track on which the carriage travels and provided with passages extending inward from the ends, perforated studs supported on the main frame and constructed to intersect said passages in the track, and locking-pins fitted to said passages and perforations, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JAMES F. McLAUGHLIN.

Witnesses:
JULIUS HIRSHFELD,
FRANK J. M. MILLER.