

B. G. STICKNEY.
TYPE WRITING MACHINE.
APPLICATION FILED DEC. 31, 1896.

NO MODEL.

5 SHEETS—SHEET 1.

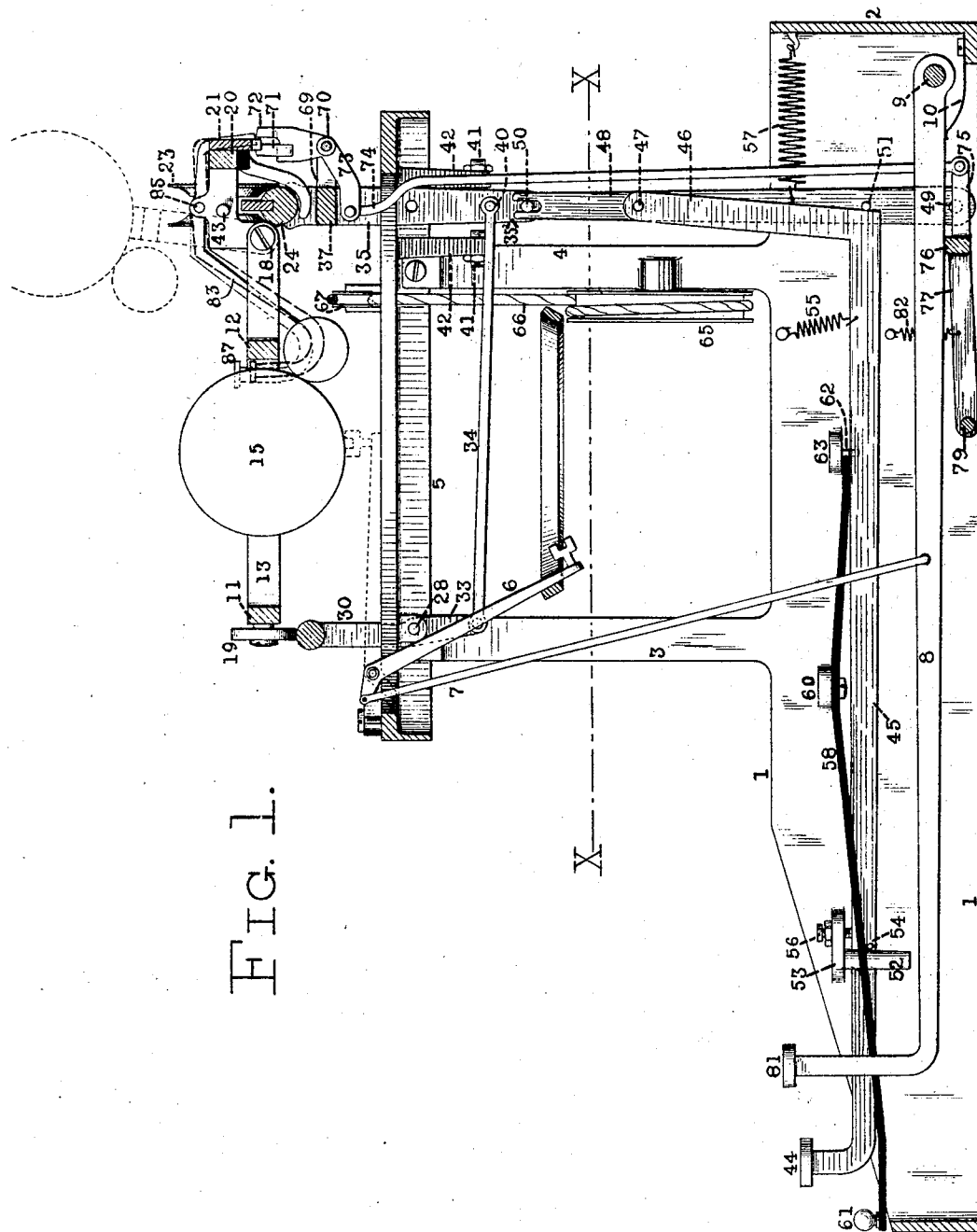


FIG. 1.

Witnesses
Carl Gabrielson
Knut Scholm

Inventor
Burnham & Stickney

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5 SHEETS—SHEET 2.

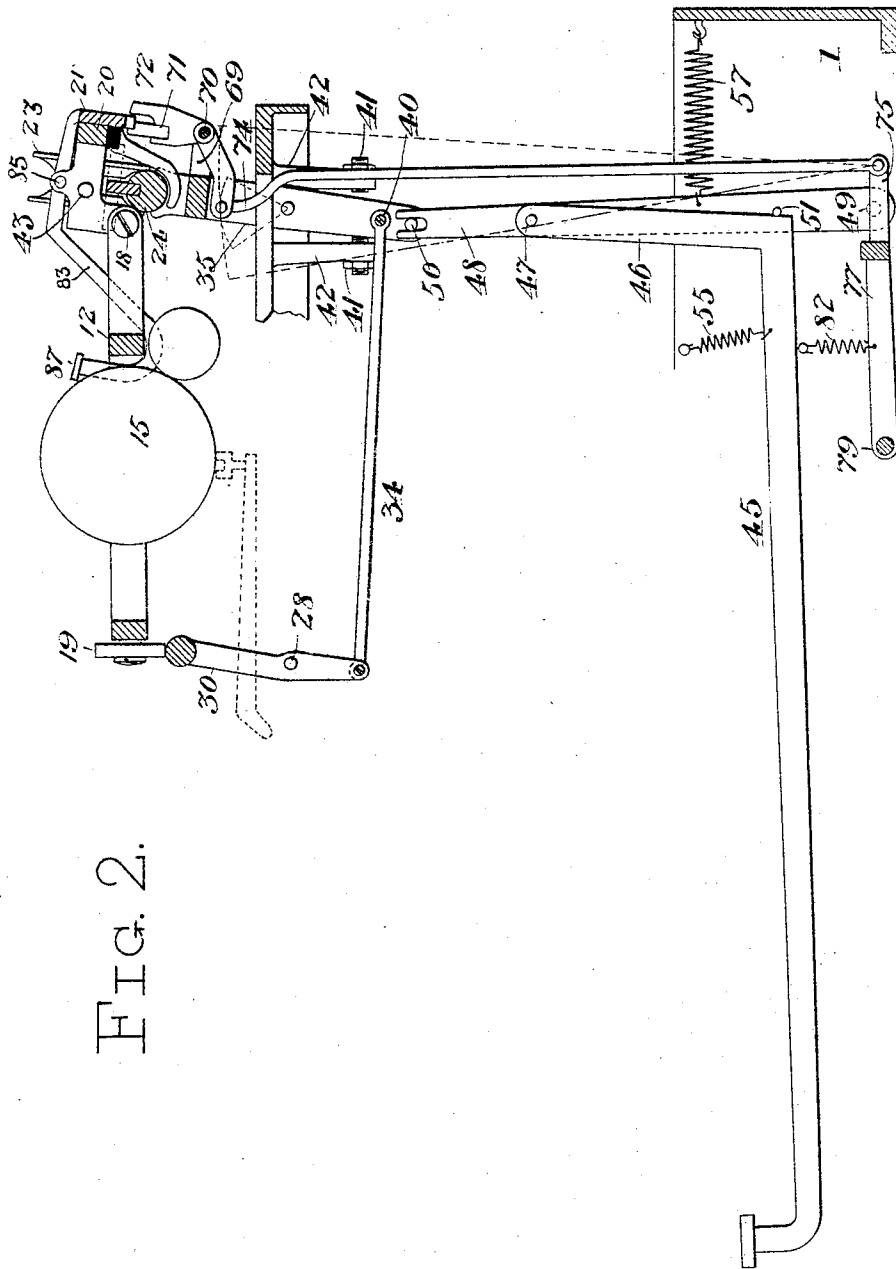


FIG. 2.

Witnesses
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5 SHEETS—SHEET 3.

FIG. 3.

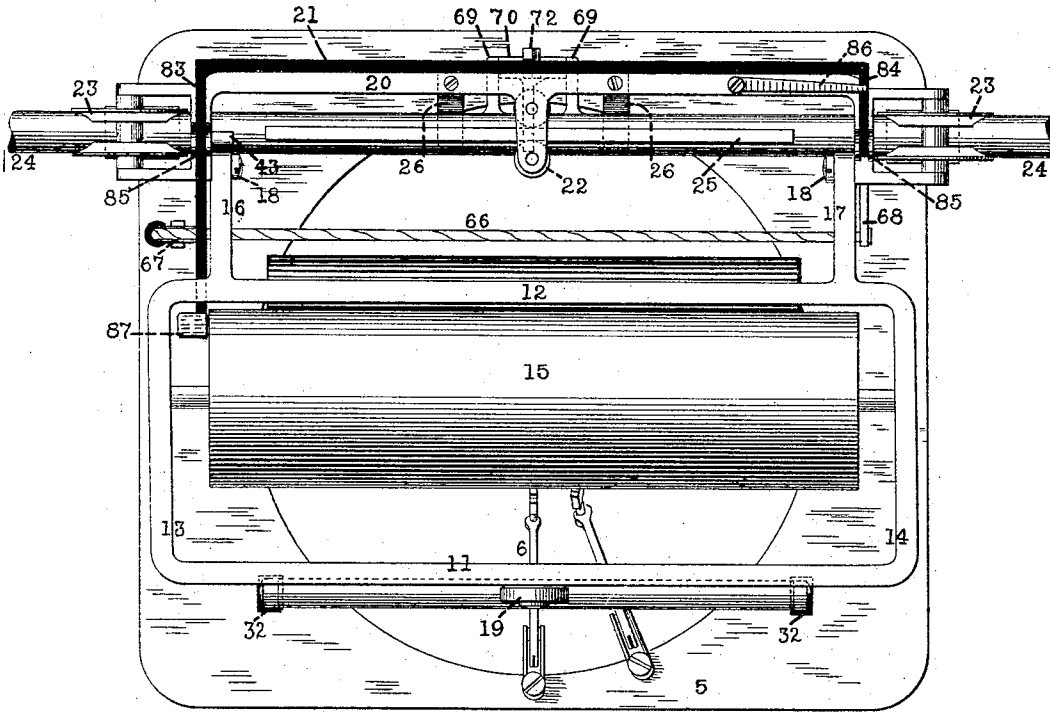


FIG. 4.

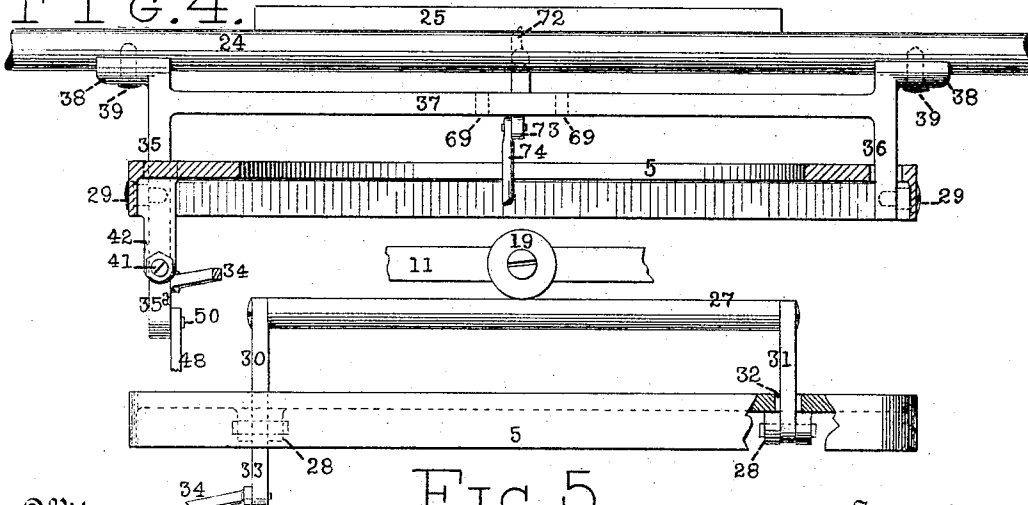


FIG. 5.

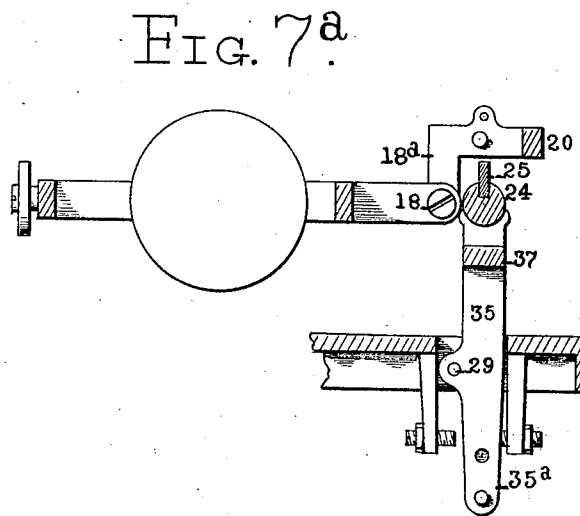
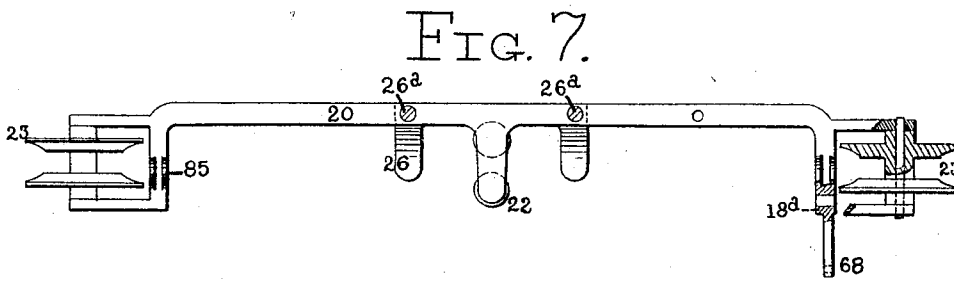
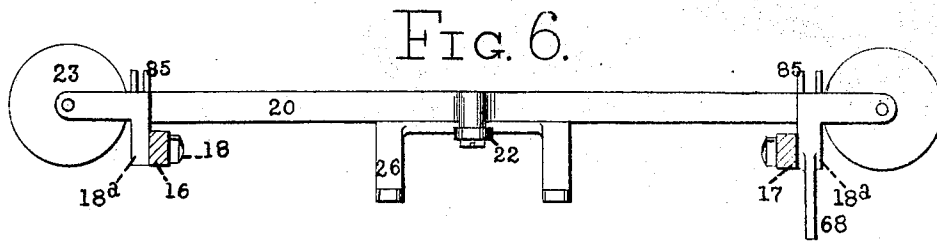
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6 SHEETS—SHEET 4.



Witnesses
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5 SHEETS—SHEET 6.

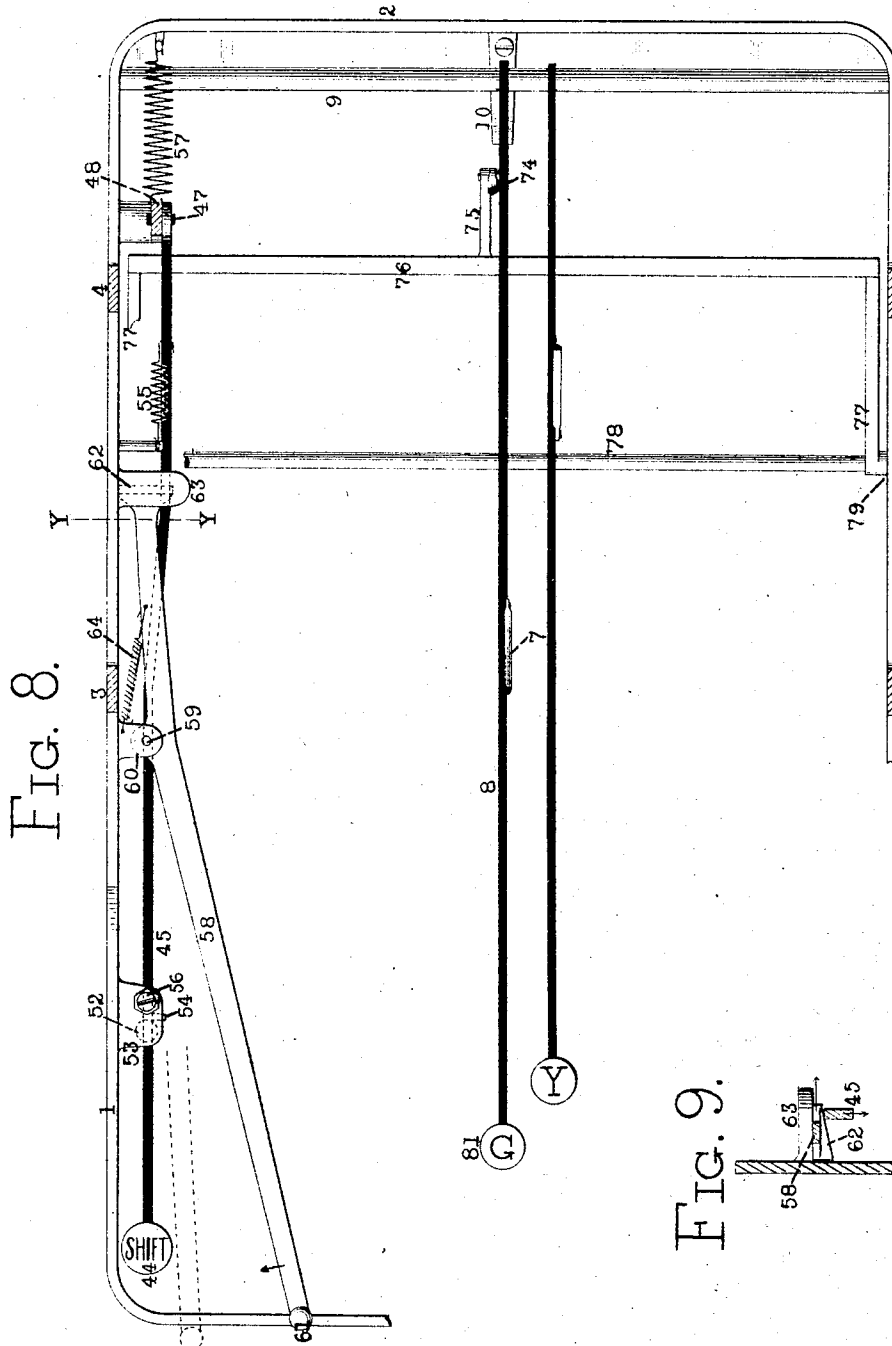
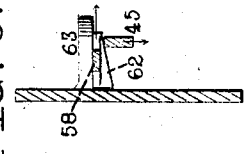


Fig. 8.

Fig. 9.



Witnesses
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UNITED STATES PATENT OFFICE.

BURNHAM C. STICKNEY, OF ELIZABETH, NEW JERSEY, ASSIGNOR, BY
MESNE ASSIGNMENTS, TO UNION TYPEWRITER COMPANY, OF
JERSEY CITY, NEW JERSEY, A CORPORATION OF NEW JERSEY.

TYPE-WRITING MACHINE.

SPECIFICATION forming part of Letters Patent No. 764,077, dated July 5, 1904.

Application filed December 31, 1896. Serial No. 617,557. (No model.)

To all whom it may concern:

Be it known that I, BURNHAM C. STICKNEY, a citizen of the United States, and a resident of Elizabeth, in the county of Union and State of New Jersey, have invented certain new and useful Improvements in Type-Writing Machines, of which the following is a specification.

My invention relates to type-writing machines of the platen-shifting class, wherein each type-bar is provided with a plurality of types; and its object is to improve the construction and simplify the operation of the shift mechanism.

The invention consists in combining a transversely-shifting letter-spacing rack with a floating platen-frame and arranging an escapement mechanism in such a way that the entire carriage may freely shift; and it further consists in the various features of construction and combinations of devices hereinafter more fully described, and particularly pointed out in the appended claims.

In the accompanying drawings, in which some portions of the machine are omitted and others broken away to more clearly exhibit the invention, Figure 1 represents a central longitudinal sectional elevation of a type-writing machine, illustrating my invention. Fig. 2 shows the positions assumed by the various parts of the shift mechanism at the depression of the shift-key. Fig. 3 is a plan of the paper-carriage and top plate. Fig. 4 is a front elevation, partly in section, of the rocking shift-rail frame and top plate. Fig. 5 is a front elevation of the forward rocking-support of the floating platen-frame. Fig. 6 is a front elevation of the rack-bearing truck, the rack, however, being omitted. Fig. 7 is a plan of the truck, omitting the rack. Fig. 7^a shows a modified construction of the floating platen-frame, truck, and rocking shift-rail frame. Fig. 8 is a plan taken on section-line X X, Fig. 1, omitting the carriage-spring drum; and Fig. 9 is a sectional front elevation taken on line Y Y, Fig. 8, and illustrates the action of the switching wedge that locks the shift-key lever in its depressed position.

Throughout the several views similar numerals of reference designate similar parts.

1 designates the side wall of the machine-base, 2 the rear wall, 3 4 posts rising from the base to support the top plate or type-bar ring 5, to which is secured in any suitable manner a circularly-arranged series of type-bars 6. Each type-bar is provided with a single type-body bearing both plain and capital types and is connected by a link 7 to one of a series of parallel key-levers 8, which are arranged upon a common fulcrum-rod 9, supported in the rear part of the base. Each lever is provided, as usual, with a suitable lifting-spring 10. The paper-carriage is supported above the top plate and at Fig. 1 is shown in normal position, so that the forward or lower-case types on the type-bars will print in the usual manner, and at Fig. 2 the carriage is shown as having been shifted rearwardly, so that the rear or upper-case types will strike the platen. The paper-carriage is of novel construction and consists of a transversely-shifting rack-bearing truck and a floating platen-frame hinged thereto and guided thereby in its longitudinal movements. A suitable spring is provided, and will be hereinafter referred to, for maintaining a constant pressure upon the platen-frame in letter-space direction, or rather the spring is connected to the truck, to which the platen-frame is hinged, and serves to propel the entire carriage step by step by actuation of the escapement mechanism. In other words, it is a "power-driven" platen-frame.

The floating platen-frame.—The platen-frame is constructed of front and rear bars 11 12 and end bars 13 14, which constitute a rectangular frame wherein the platen is suitably mounted for rotation. The platen may be provided with suitable rotating mechanism and paper-guides, which are, however, omitted from the drawings for the sake of more clearly exhibiting the invention and which of course would be mounted upon the platen-frame. Extending rearwardly from the rear bar 12 of the platen-frame are arms 16 17, which at their rear ends are secured by pivot-

screws 18 to the lower ends of arms 18^a, depending from the truck at a point in front of the shift-rail. By means of this hinge the platen-frame may be swung up to exhibit the writing, as indicated by dotted lines at Fig. 1, and is also at the shifting operation permitted to float transversely in a substantially horizontal direction while the truck rocks, Fig. 2. The front bar 11 of the platen-frame is provided with the usual traveling roll 19.

The rack-bearing truck.—The body of the truck consists of a U-shaped bar 20, to which is secured a letter-spacing rack 21 in engagement with the escapement mechanism, as will presently be more fully explained. The truck-bar runs upon a pair of vertically-arranged supporting and guiding wheels 23, one at each end of the bar, which roll upon a cylindrical shift rail or bar 24. As shown at Fig. 7, each wheel is formed of one piece of metal and consists of a long hub and a pair of flanges. A central hole is drilled longitudinally through the hub, into which is tightly driven a longer axle-pin, the ends whereof turn freely in holes drilled through the extremities of a fork formed at each end of the truck-bar. The inner treads of the wheel converge and rest upon the rail at a point where the sides of the rail incline a little, so that the wheel grasps the rail firmly, yet rolls freely thereon. By this construction wear is taken up automatically and the wheels continue to grasp the rail firmly, and the truck and platen-frame are locked against vibration. To prevent the truck from slipping around the rail or rocking independently thereof, the rail (designated by the numerals 24) is provided with a rigid vertical fin or rib 25, Fig. 4, equal in length to the distance traveled by the paper-carriage. About midway of its length the truck-bar is provided with a forwardly-projecting arm, upon the under side of which is mounted a pair of horizontal rolls 22, which clasp the rib, one on each side thereof. In place of the arm and rolls 22 the truck-bar could be provided with a plain yoke to engage the rib; but I prefer the rolls, as they preclude the possibility of binding. The metal between the flanges of the wheels 23 is cut away to permit them to pass freely over the rib 25. The inner treads of these flanges are not cut to match the contour of the rail, but are cut on eccentric curves having a larger radius than that of the rail. To prevent the truck from being accidentally lifted from the rail, it is provided with preferably two hooks 26 made in one piece and removably secured to the truck-bar, preferably by screws 26^a. Upon removing the hooks the truck and attached platen-frame may be lifted from the machine.

From wear or inaccurate fitting of rolls 22 there is liability of the truck rocking slightly or shaking upon the rail, and for this reason the platen-frame is pivoted to or hinged to the

truck at a point thereon which would move vertically should the truck shake or turn slightly about the rail, since a slight vertical movement of the rear portion of the platen-frame would not be harmful. Of course the platen-frame could be hinged to the truck at a point directly above the shift-rail; but in that case any shake of the truck would communicate a horizontal movement to the entire platen-frame and impair the alinement of the writing, and the impact of the platen-frame at the shifting operation would tend to shake and bend the truck. By arranging the hinge-point substantially level with the point which would be the center of motion if the truck should shake on the rail the impact of the platen-frame does not tend to shake the truck or rock it about the rail, and any possible shake of the truck communicates a vertical motion to the rear end of the platen-frame. This feature is shown best at Fig. 7^a. The platen-frame is hinged to arms 18^a extending down from the rack-bar to a point directly in front of the shift-rail. The platen-hinge may be arranged concentrically with the shift-rail, the hinge-joint being made tubular and encircling the rail in a manner well known in this art, and the wheels 23 may be dispensed with, the tubular hinge being made to fit the shift-rail closely; but I prefer the construction set forth in the drawings, as the small hinge-joint permits an easy floating movement of the platen-frame and the wheels permit an easy longitudinal movement thereof. The hinge-joint may be arranged at a point directly back of the rail, with the same general result; but I prefer to arrange it in front, which is less complicated and brings the platen further front when tilted to an upright position. An important feature of this part of the invention is that the hinge-joint shall be arranged substantially on a level with the point that would be the center of motion of the truck in case it should shake slightly upon the rail, which point in this construction coincides with the center or axis of the rail itself, but in other constructions would coincide with the point where the truck-rolls bear upon the rail.

The forward rocking track.—The forward carriage-track 27, upon which the roll 19 travels, is rigidly secured to the upper ends of a pair of rocker-arms 30 31, the lower ends of which are sunken through holes 32 in the plate and hinged or pivoted at 28 to short lugs depending from the plate. By this construction the track is permitted to move rearwardly with the floating platen-frame. As the pivots 28 are arranged close to the plate the holes 32 in the plate are made only large enough to permit placing the rocker-arms therein, as the vibration of the rocker-arms at the point where they rise from the plate is so slight as to require no appreciable amount of room. The left-hand rocker arm or bar 30 is pro-

vided below its pivot with a downwardly-extending arm 33, to the lower end of which is attached the forward end of a horizontal link 34, through which the motion of the rocking shift-rail frame is transmitted to the forward rocking track, so that the track is always sure to be in position for supporting the roll 19. So long as the platen-frame floats it is immaterial how it is supported in front; but I prefer the construction shown, as it practically eliminates friction without giving the machine a complicated appearance or action.

The rocking shift-rail frame.—As shown clearly at Fig. 4, the shift-rail 24 is rigidly secured to the upper ends of a pair of rocker-bars 35 36, which to give the required stiffness to the frame are rigidly united above the top plate by a cross-bar 37, made, preferably, in one piece with the rock-bars 35 36. The shift-rail is secured in sockets 38 by screws 39, passing upwardly through the sockets. The lower portions of the rocker-bars 35 36 are sunken in holes in the top plate and hinged or pivoted upon nipple-screws 29. Owing to the arrangement of the stiffening-bar 37 above the top plate, it does not interfere with the ready removal of the rocking frame from the machine or its replacement therein, which would not be the case if the stiffening-bar were arranged below the top plate. The stiffening-bar may be dispensed with or made in one piece with the shift-rail; but I prefer the construction shown.

All of the shift-pivots 29, 28, and 18 may safely be made of quite small diameter, so that the platen-frame will float in response to a light touch, while owing to the long hinges of the platen-frame and rocking frames the possibility of binding is precluded.

For the purpose of actuating the rocking shift-rail frame as well as limiting its motion the rocker-bar 35 is provided below the top plate with an extension or lever 35^a. Depending from the top plate in the immediate vicinity of rocker-arm 35^a are lugs 42, provided at their lower ends with adjustable locking-screws 41 to limit the movements of the arm and rocking frame. The rear end of link 34 is attached to the arm 35^a, so that the forward track is caused to move in unison with the shift-rail. To bring the line of writing into view, the platen-frame is swung up about the float-hinge 18 and tilted back until checked by a stop-pin 43, arranged upon the arm of the truck-bar. When the platen-frame is in this position, the carriage may be moved endwise as readily as when down in working position. The longitudinal movements of the carriage are limited in either direction by the contact of hooks 26 with the upper portions of the rocker-arms 35 36.

It will be perceived that the rack-bearing truck partakes of the rocking motion of the shift-rail frame, whereas the platen-frame, by reason of its forward support being inde-

pendent of the rear shift-rail frame, floats, not rocks, from one position to the other. So long as the rack is arranged to move longitudinally upon the shift-rail frame it is immaterial whether it be arranged behind, before, above, or below the shift-rail, since in any case it will partake of the motion of the shift-rail frame and move or shift transversely. I regard the construction shown as the most convenient. So far as part of my invention is concerned it is not essential, so long as the rack is secured to the floating platen-frame, that it shall be hinged or pivoted thereto, as I do not desire to be limited to the particular features of construction herein shown.

By reference to Fig. 2 it will be seen that the rear portion of the platen-frame when at the capital-shift position is slightly elevated. This is immaterial, so long as the platen-frame floats in substantially horizontal direction. I prefer the arrangement shown at Fig. 7^a, where the axis of the rail is in the same horizontal plane with that of the hinge 18 and the pivot 29 of the rocking shift-rail frame is arranged right beneath the hinge 18, so that the hinge will be in substantially the same horizontal plane at either normal or capital shift position. The construction may be reversed by making the forward rail the shift-rail for guiding and shifting the platen-frame, and the rack may be arranged at the forward shift-rail, the platen in such a case being made to roll up in a manner well known in the art; but so long as the rack is adapted to shift transversely and is connected to a floating platen-frame it is immaterial whether the front or rear rail be made the shift-rail or whether the rack be arranged in rear or in front of the platen. I prefer the construction shown as being simpler and more convenient.

Detent for the shift-rail.—The shift-rail is provided with a detent that locks it in normal position, so that it cannot be moved by pressure applied directly either to the shift-rail or to the platen; but the shift-key is adapted to move the detent and the shift-rail, the construction being as follows: The shift-key 44 is secured upon the forward end of the detent-bar 45, which extends rearwardly nearly the entire length of the base and at its rear end is bent upwardly at 46 to form an L. The upper end of the bent portion is pivoted at 47 to an upright rocking-lever 48, which is pivoted at 49 in the base of the machine and provided at its upper end with a fork which engages a pin 50, that projects laterally from the lower end of arm 35^a of the shift-rail frame. The vertical lever 48 is provided with a lateral projection 51, against which the elbow-like device 45 bears when pressure is applied at the key. At the normal actuation of the shift mechanism the elbow device and the upright lever 48 move integrally, both turning

about the pivot 49, the upper end of the lever 48 moving forward, carrying with it the lower end of the rocking-frame arm 35^a, whereby the shift-rail is moved back, carrying the paper-carriage rearwardly. The detent-bar 45 serves, therefore, as a lever for the shift-key for transmitting the movement of the key to the shift-rail frame. The forward portion of the detent-bar 45 is provided with a slotted guide-post 52, depending from an ear 53, projecting inwardly from the side wall of the base. The weight of the detent device or elbow-lever is sustained by a spring 55, and the upward swing of the forward end thereof is limited by an adjustable screw 56, projecting below the ear 53, immediately in rear of the guide-post 52. This screw may be adjusted so that there will be little, if any, lost motion of the key before the lever 45 contacts with the projecting pin 51 on the upright lever 48. If by accident the platen-frame or the shift-rail should be pressed rearwardly—*i. e.*, without manipulating the shift-key—the lower end of arm 35^a would be pressed forwardly, as would also the upright lever 48, and the forward pressure would of course be transmitted to the elbow device 45, which, however, would not then swing down about the pivot 49, owing to the upward pull of the spring 55, so that the action of the bar 45 would be in a forward direction only. Immediately in rear of the guide-post 52 the detent-bar 45 is provided with a lateral projection or pin 54, which as soon as a forward impulse is imparted to the detent-bar in the manner just described will contact with the guide-post and check the detent-bar, as well as the upright lever 48, the shift-rail frame, and the platen-frame.

The detent is particularly useful in connection with the described construction of hinged platen-frame, since it holds the shift-rail steadfast when the platen-frame is swung up to exhibit the writing, which otherwise would be liable to swing and annoy the operator. The detent may, however, be used in connection with other forms of shifting mechanism whether such mechanisms embody merely a shifter-bar of any well-known construction connected to the platen-frame or where the type-bars shift in a body and the platen is of the non-shifting kind. On the other hand, the other portions of my invention may be used singly or collectively without the detent.

I have devised many ways for carrying out the part of my invention which relates to the shift and detent mechanism and do not, therefore, desire to be limited to the construction shown.

It will be perceived that the lever 45 serves as a detent and that upon manipulation of the shift-key the detent is moved to an abnormal position and the shift-rail is also actuated to move the platen transversely. A spring 57, one end of which is attached to the vertical lever 48 and the other to the rear wall of the

base, returns the shift-rail and connected parts to normal position upon the relief of the shift-key from downward pressure.

The switch.—To leave both hands free for writing a line of capital letters a switch is provided consisting of a horizontally-arranged switch-lever 58, Figs. 1, 8, which is pivoted between its ends at 59 to a lug 60, formed on the wall of the base. The switch-lever is provided at its forward end with a handle 61 and at its rear end with a flange 62, shaped like a wedge, the small end pointing toward the center of the machine and arranged just above the shift-key lever 45. When the handle 61 is swung toward the shift-key, the latter will be wedged down and locked in its depressed position. The switching operation may be performed with facility by pressing down the shift-key with, say, the fourth finger of the left hand, and simultaneously reaching out with the thumb and swinging the handle 61 to the left. To support the rear portion of the switch-lever so that it will not bend under the wedging strain, a wedge-plate 63 is fixed above and contiguous to the wedge, and the upper edge of the wedge slides in contact with the lower surface of the wedge-plate. A spring 64 is connected at one end to the switch-lever and at the other end to lug 60, Fig. 8, to hold the switch-lever in normal position. When it is desired to return the switch-lever to normal position, the handle 61 may be forced to the right or else the shift-key 44 may be subjected to a slight pressure sufficient to flex the bar 45 and release the wedge, whereupon the spring 64 will swing the switch-lever to normal position.

It is immaterial whether the switch-lever be arranged to swing horizontally or in a vertical plane, so long as it is so arranged that it can be swung toward the shift-key by the thumb at the same time that one of the fingers is depressing the key. Other variations in the construction may be made without departing from the spirit of this portion of my invention, which of course may be used in connection with other forms of shifting mechanism than those herein claimed. The other parts of the invention may be used, if desired, without a switch.

Means for propelling the platen-frame.—As already explained, the platen-frame is power-driven—that is, it is driven by power that is stored up in a mainspring at each return movement of the paper-carriage to begin a new line. This power serves also to drive the truck to which the platen-frame is hinged. The mainspring is suitably arranged in the usual spring-barrel 65, Fig. 1, mounted upon the post 4. A cord 66 is secured at one end to the barrel and passed thence up and through a hole in the top plate and over a pulley 67, thence horizontally below the platen-frame, (so as not to interfere with the swinging up thereof,) and is secured to a finger 68, project-

ing forwardly and downwardly from the right-hand arm 18^a of the truck-bar, Figs. 3, 7. The horizontal portion of the cord will readily vibrate to accommodate the shifting motion of the truck. The cord may be connected directly to the platen-frame; but as that would cause side pressure and friction at the platen-hinge and would somewhat impede the floating movement of the platen-frame I prefer to connect it to the truck. I have devised various other constructions of a power-driven floating platen-frame connected to a transversely-moving rack and prefer the construction shown, but do not desire to be limited thereto.

Escapement mechanism.—If the rack should be arranged directly in engagement with escapement-dogs, the latter being incapable of moving transversely with the rack, it would follow that the shifting movement of the rack would be impeded to an extent measured by the amount of friction between the rack-teeth and the dogs, caused by the constant pull of the carriage-spring in letter-space direction. The friction arising from this cause, unless some adequate provision be made for minimizing or eliminating it, would be so serious as to destroy the usefulness of the invention. I have devised several methods of so constructing the power-driven platen-frame, the shifting rack, and the escapement mechanism as that the platen-frame and rack may be shifted freely—that is, with no frictional opposition from the spacing-dogs or their equivalent. I have shown and will now describe the preferred construction, although I do not desire to be limited thereto.

The escapement mechanism is suitably mounted upon the shift-rail frame in engagement with the rack and shifts therewith. A pair of horizontal lugs 69 project rearwardly from the cross-bar 37 about midway of its length. Confined between the lugs and pivotally supported thereby is a rocker or trunnion 70, and constructed integrally therewith is the usual detent 72, with which cooperates the usual feeding-dog 71. The detent is provided with a forwardly-projecting operating-arm 73, to which is connected the upper end of a bent vibratory link 74. Other forms of escapement mechanism employing other forms of detents may be used. The lower end of the vibratory link is connected directly to some portion of the universal-bar frame, preferably by pivoting it to an arm 75 thereon. The universal bar 76 is rigidly secured to the rear ends of a pair of vibrating arms 77, one at each end of the machine. The vibrating arms are also united at their forward ends by a rock-shaft 78, pivoted at 79 in the side walls of the base, Figs. 1, 8. Other forms of universal bars and frames may be used. The key-levers 8 are pivoted at their rear ends to fulcrum-rod 9 and are provided at their forward ends with keys 81. About midway of

its length each lever is connected by a link 7 to one of the circular series of type-bars 6. Only two type-bars and two key-levers are shown. The universal bar extends across the machine just beneath the key-levers and is depressed when any key-lever is actuated, pulling down the vibratory bent link 74 and operating the detent, which moves into engagement with the rack, while the vibratory spacing-dog moves out of engagement and springs into position to engage the next rack-tooth in the usual manner. Upon the finger-key being relieved from pressure the parts resume normal position and the paper-carriage is permitted to advance one step under the pull of the mainspring, as usual. A spring 82, attached at one end to arm 77 of the universal-bar frame and at the other end to a pin projecting from the base, serves to restore the universal bar and feed mechanism to normal position.

The invention may of course be used in connection with other constructions of key-levers, type-bars, universal bars, and connecting-links.

As indicated by dotted lines at Fig. 2, when the rocking shift-rail frame is moved to its rear position the upper end of vibratory link 74 swings through a short arc, which during this short movement substantially coincides with an arc drawn from the pivotal point of the rocking shift-rail frame, so that the detent is not moved independently of the shift-rail frame, and the escapement mechanism operates with equal facility when the carriage is at the capital shift. By this construction it will be perceived that I secure the required free shifting motion of the rack and floating platen-frame by the expedient of mounting the escapement mechanism upon the rocking shift-rail frame, so that the escapement mechanism and the rack maintain the same relation to each other during the entire shift operation. I have, however, carried out this portion of my invention in other ways, in which the escapement mechanism is not mounted upon the rocking shift-rail frame, and I do not, therefore, although preferring the construction shown, desire to be limited thereto.

Carriage release.—The rack is pivotally mounted upon the truck and provided with a finger-piece, whereby it may be swung out of engagement with the escapement mechanism; so that it may be moved rapidly in either direction. The rack is provided with two forwardly-extending integral arms 83 84, which are pivoted at 85 to the side arms of the truck-bar 20. It is held in normal position by a flat spring 86, which is secured to the truck-bar and bears down upon the right-hand arm 84 of the rack, Fig. 3. The other arm, 83, of the rack extends forwardly a short distance beyond the pivot, thence downwardly and forwardly and beneath the rear bar 12 of the platen-frame, so that it will not prevent the

platen-frame from being swung up. It is then bent upwardly inside the platen-frame and provided with a head or key 87, pressure upon which will swing the rack out of engagement with the escapement mechanism, as shown by dotted lines at Fig. 1. The rack may be released with equal facility when in the position shown at Fig. 2 and also when the platen-frame is tilted up to expose the writing. The spacing-dog 71 may be jointed in a well-known manner to permit the paper-carriage to be moved to the right without manipulation of the release-key.

Other forms of carriage-release may be employed in connection with other parts of the invention.

The rack 21 has two distinct transverse movements—one when shifting transversely with the platen-frame and the other when disconnecting the feed-dogs; but when mention is made herein of the “transverse movement of the rack” the shifting movement is meant and not the disconnecting movement. I do not refer to the joint 83 when alluding to the attachment or pivotal connection of the rack to the platen-frame.

Parts of my invention may be used without others, and I do not, therefore, wish to be considered as limiting myself to a machine in which all of the invention is employed. The various contrivances herein set forth may be employed in a machine having three types on a bar.

I have indicated wherein various features of construction were not essential to those portions of the invention, broadly considered, in connection with which they were respectively described, and it is obvious that in numerous other instances variations may be made from the particular features of construction set forth without departing from the spirit of my invention, and I do not, therefore, desire, so far as either the broad or the subordinate features of my invention are concerned, to be limited to the particular constructions and arrangements herein set forth.

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

1. In a type-writing machine, the combination with a platen and a series of type-bars, each bearing a plurality of types, of a power-driven platen-frame adapted to float transversely and adapted also to be swung upwardly and rearwardly to exhibit the writing, a transversely-shifting rack device attached thereto so as to move transversely simultaneously therewith, and escapement devices engaging said rack device both when the platen-frame is down in working position and also when the platen-frame is swung up, substantially as set forth.

2. In a type-writing machine, the combination with a platen and a series of type-bars, each bearing a plurality of types, of a power-driven platen-frame and a transversely-shift-

ing rack device attached thereto; the platen-frame being provided with a hinge device whereby it is enabled both to float transversely and swing up to expose the writing, and escapement devices engaging said rack device both when the platen-frame is down in working position and also when the platen-frame is swung up, substantially as set forth.

3. In a type-writing machine, the combination with a platen and a series of type-bars, each bearing a plurality of types, of a power-driven platen-frame adapted to float transversely, and a transversely-rocking rack-carrying device hinged thereto, and constructed to guide said platen-frame in its longitudinal movements, substantially as set forth.

4. In a type-writing machine, the combination with a platen and a series of type-bars, each bearing a plurality of types, of a transversely-rocking rack-carrying device and a power-driven platen-frame hinged thereto, whereby it is adapted both to float transversely and to swing up to exhibit the writing, substantially as set forth.

5. In a type-writing machine, the combination with a platen and a series of type-bars, each bearing a plurality of types, of a transversely-rocking rack device; a power-driven floating platen-frame hinged thereto and adapted to swing up about the hinge to exhibit the writing; and an escapement mechanism adapted to control the rack at a plurality of shift positions, and so constructed and arranged as to permit the free transverse rocking movements of the rack, substantially as set forth.

6. In a type-writing machine, the combination with a platen and a series of type-bars, each bearing a plurality of types, of a rocking shift-rail frame; a rack device arranged to travel upon the shift-rail and to rock therewith; and a power-driven floating platen-frame hinged to the rack device, and guided thereby in its longitudinal movements, substantially as set forth.

7. In a type-writing machine, the combination with a platen and a series of type-bars, each bearing a plurality of types, of a rocking shift-rail frame; a rack device arranged to travel upon the shift-rail and to rock therewith; a power-driven floating platen-frame hinged to the rack device and adapted to swing up about the hinge to exhibit the writing; and an escapement mechanism adapted to control the rack at a plurality of shift positions, and so constructed and arranged as to permit the free rocking movements of the rack, substantially as set forth.

8. In a type-writing machine, the combination with a platen and a series of type-bars, each bearing a plurality of types, of a rocking shift-rail frame arranged back of the platen; a rack device arranged to travel upon the rocking shift-rail frame; and a power-driven platen-frame hinged in rear of the

platen to the rack device, and provided with a forward support independent of the rocking shift-rail frame, so that it may float transversely and also swing up and be wholly supported upon the rocking shift-rail frame, substantially as set forth.

9. In a type-writing machine, the combination with a platen and a series of type-bars, each bearing a plurality of types, of a rocking shift-rail frame; a rack device arranged to travel thereon; an escapement mechanism arranged upon the rocking shift-rail frame in engagement with the rack; and a floating power-driven platen-frame hinged to the rack device, and guided thereby in its longitudinal movements, substantially as set forth.

10. In a type-writing machine, the combination with a platen and a series of type-bars, each bearing a plurality of types, of a rocking shift-rail frame arranged back of the platen; a rack device arranged to travel upon the rocking shift-rail frame; an escapement mechanism arranged upon the rocking shift-rail frame in engagement with the rack; and a power-driven platen-frame hinged in rear of the platen to the rack device, and provided with a forward support independent of the rocking shift-rail frame, so that it may float transversely and also swing up and be wholly supported upon the rocking shift-rail frame, substantially as set forth.

11. In a type-writing machine, the combination of a series of type-bars mounted in the top plate and each provided with a plurality of types; a universal bar; a series of key-levers arranged in the base and adapted to actuate the type-bars and universal bar; a rocking shift-rail frame having its lower portions sunken in the top plate and hinged therein; an escapement mechanism mounted upon the rocking shift-rail frame and operatively connected to the universal bar; a rack device arranged to travel upon the rocking shift-rail frame in engagement with the escapement mechanism; and a floating power-driven platen-frame hinged to the rack device, substantially as set forth.

12. In a type-writing machine, the combination with a platen and a series of type-bars, each bearing a plurality of types, of a transversely-shifting rail supported upon the machine-frame in rear of the platen; a transversely-shifting rail independently supported upon the machine-frame in front of the platen; means for connecting the rails to enable them to shift in unison; a power-driven platen-frame adapted to move longitudinally and float transversely upon the rails; and a transversely-shifting rack-carrying truck pivotally attached to the platen-frame, substantially as set forth.

13. In a type-writing machine, the combination with a platen and a series of type-bars, each provided with a plurality of types, of a rocking frame arranged in rear of the platen;

a rack device arranged to travel thereon; a rocking frame arranged in front of the platen and so connected to the rear rocking frame as to move in unison therewith; and a power-driven platen-frame hinged to the rack device and removably supported upon the front rocking frame, whereby the platen-frame may be floated transversely, and may also be swung up to exhibit the writing, substantially as set forth.

14. In a type-writing machine, the combination with a platen and a series of type-bars mounted in the top plate and each provided with a plurality of types, of a universal bar; a series of key-levers arranged in the base and adapted to actuate the type-bars and universal bar; a rocking shift-rail frame arranged in rear of the platen and having its lower portions sunken in the top plate and hinged therein; an escapement mechanism mounted upon the rocking shift-rail frame and operatively connected to the universal bar; a rack device arranged to travel upon the shift-rail in engagement with the escapement mechanism; a rocking frame comprising a rail arranged in front of the platen and having its lower portions sunken in the top plate and hinged therein, and connected to the rocking shift-rail frame to move therewith; and a power-driven platen-frame hinged to the rack device and removably supported upon the front rail, substantially as set forth.

15. In a type-writing machine, the combination with a platen and a series of type-bars mounted in the top plate and each provided with a plurality of types, of a rocking frame arranged in rear of the platen; a rocking frame arranged in front of the platen; the lower portions of each rocking frame being hinged in the top plate, and each being provided below its pivotal point with a downwardly-extending arm; a link connecting the arms; a power-driven platen-frame arranged to float transversely upon the rocking frames and to travel longitudinally thereon; and a transversely-shifting rack attached to the platen-frame, substantially as set forth.

16. In a type-writing machine, the combination with a platen and a circular series of type-bars mounted in the top plate and each provided with a plurality of types, of a rocking frame including a pair of rocker-bars hinged in the framework of the machine and rigidly united above the top plate by a cross-bar; an escapement mechanism arranged upon the cross-bar and operatively connected to the finger-keys; a rack device arranged to travel upon the rocking frame in engagement with the escapement mechanism; and a power-driven floating platen-frame hinged to the rack device, substantially as set forth.

17. In a type-writing machine, the combination with a platen and a series of type-bars mounted in the top plate and each provided with a plurality of types, of a rocking frame

consisting of a pair of pivoted rocker-arms and a cross-bar rigidly uniting them above their pivots, and a shift-rail secured to the device above the cross-bar; a rack device arranged to travel on the rail; an escapement mechanism arranged upon the cross-bar in engagement with the rack and operatively connected to the finger-keys; and a power-driven floating platen-frame hinged to the rack device, substantially as set forth.

18. In a type-writing machine, the combination with a platen and a series of type-bars mounted in the top plate and each provided with a plurality of types, of a rocking frame including a pair of rocker-arms having their lower portions sunken in the top plate and pivoted therein, a cross-bar rigidly uniting the arms above the top plate, and a shift-rail secured to the rocking frame above the cross-bar, substantially as set forth.

19. In a platen-shifting mechanism of a type-writing machine, the combination of a shifter-bar, secured to the upper portions of a pair of rocker-bars sunken in the top plate and pivoted therein; an arm extending downwardly from one of the rocker-bars; and a lug depending from the top plate in proximity to the arm and bearing an adjustable stop for the arm, substantially as set forth.

20. In a type-writing machine, the combination with a platen, a universal bar mounted upon the framework, and a series of type-bars, each provided with a plurality of types, of a transversely-moving frame; a rack device arranged to travel thereon; a power-driven floating platen-frame attached to the rack device; an escapement mechanism, including a detent, arranged upon the transversely-moving frame; and a link extending directly from the universal bar to the detent, substantially as set forth.

21. In a type-writing machine, the combination of a shift-rail; a rack-bearing truck having a pair of supporting guide-wheels for grasping the rail; and a power-driven floating platen-frame hinged to the truck, substantially as set forth.

22. In a type-writing machine, the combination of a rocking frame having a pair of rocker-bars sunken in the top plate and hinged therein, and rigidly united above the top plate by a cross-bar; a shift-rail secured to the rocker-bars above the cross-bar, the ends of the shift-rail projecting beyond the cross-bars; a rack-bearing truck arranged to roll upon the shift-rail; and a power-driven floating platen-frame hinged to the truck, substantially as set forth.

23. In a type-writing machine, the combination of a rocking frame bearing a shift-rail; a rack-bearing truck having a pair of supporting guide-wheels and adapted to roll upon the shift-rail; means for preventing the truck from rocking independently upon the shift-rail; an escapement mechanism arranged upon the rocking frame in engagement with the

rack, and a power-driven floating platen-frame hinged to the truck, substantially as set forth.

24. In a type-writing machine, the combination with a cylindrical shift-rail provided with a rib of a rack device arranged to travel upon the rail in engagement with the rib, and a floating power-driven platen-frame hinged to the rack device, substantially as set forth.

25. In a type-writing machine, the combination with a cylindrical shift-rail provided with a rib of a rack-bearing truck having a rolling engagement with the rib and having also a pair of supporting guide-wheels adapted to grasp the rail; and a power-driven floating platen-frame hinged to the truck, substantially as set forth.

26. In a type-writing machine, the combination with a cylindrical guide-rail provided with a rib shorter than the rail, of a rack-bearing truck provided at each end with a fork, and a supporting guide-wheel arranged in each fork; and also provided about midway of its length with a pair of rolls for engaging the rib, substantially as set forth.

27. In a type-writing machine, the combination of a rocking frame bearing a shift-rail having inclined surfaces; a rack-bearing truck having a pair of supporting guide-wheels whose treads are adapted to grasp the inclined surfaces; means for preventing the truck from rocking independently upon the shift-rail; and a power-driven floating platen-frame hinged to the truck, substantially as set forth.

28. In a type-writing machine, the combination of a rocking frame bearing a shift-rail; a rack device adapted to travel thereon; means for opposing the independent rocking movement of the rack device upon the shift-rail; and a floating power-driven platen-frame hinged to the rack device, the pivotal point of the hinge being substantially level with the center of the independent motion of the rack device upon the shift-rail, substantially as set forth.

29. In a type-writing machine, the combination of a rocking frame bearing a shift-rail; a rack-bearing truck adapted to travel thereon; means for opposing the independent rocking movement of the truck upon the shift-rail; and a power-driven floating platen-frame hinged to the truck, the pivotal point of the hinge being in front of and in proximity to the shift-rail, substantially as set forth.

30. In a type-writing machine, the combination of a shift-rail; a truck adapted to roll thereon; a rack arranged upon the truck; a pair of arms upon the truck extending to a point forward of the shift-rail and in proximity thereto; and a power-driven floating platen-frame hinged to the arms at their ends, substantially as set forth.

31. In a type-writing machine, the combination with a shift-rail of a rack-bearing truck adapted to roll thereon and provided with a hook extending beneath the rail, and a power-

driven floating platen-frame hinged to the truck, substantially as set forth.

32. In a type-writing machine, the combination with a rocking shift-rail frame of a truck 5 bearing a rack and adapted to roll upon the shift-rail, and also provided with a stop-finger to limit the longitudinal travel of the truck, the finger hooking beneath the rail to secure the truck thereto; and a power-driven floating 10 platen-frame hinged to the truck, substantially as set forth.

33. In a type-writing machine, the combination with a platen and a series of type-bars, each bearing a plurality of types, of a power- 15 driven transversely-floating platen-frame; a transversely-shifting rack pivotally attached thereto; an escapement mechanism adapted to control the rack; and means for releasing the rack from the control of the escapement mech- 20 anism, to enable it to be moved rapidly in letter-space direction, substantially as set forth.

34. In a type-writing machine, the combination with a platen and a series of type-bars, each bearing a plurality of types, of a rock- 25 ing frame; a rack device arranged to travel thereon; an escapement mechanism arranged upon the rocking frame in engagement with the rack; a power-driven transversely-floating platen-frame hinged to the rack device; 30 and means for releasing the rack from the control of the escapement mechanism, substantially as set forth.

35. In a type-writing machine, the combination with a platen and a series of type-bars, 35 each bearing a plurality of types, of a rocking shift-rail frame; a rack device arranged to travel upon the shift-rail; an escapement mechanism arranged upon the rocking shift-rail frame in engagement with the rack; a 40 power-driven transversely-floating platen-frame hinged to the rack device, so that it may be swung up to exhibit the writing; and means arranged upon the rack device for releasing the rack from the control of the escapement mechanism, said means including a 45 forwardly-extending operating device, substantially as set forth.

36. In a type-writing machine, the combination with a platen and a series of type-bars, 50 each bearing a plurality of types, of a rocking shift-rail frame; a truck arranged to roll upon the shift-rail; a power-driven transversely-floating platen-frame hinged to the truck; an escapement mechanism arranged 55 upon the rocking shift-rail frame; and a rack hinged to the truck in engagement with the escapement mechanism and adapted to swing out of engagement therewith, substantially as set forth.

37. In a type-writing machine, the combination with a transversely-shiftable platen of a 60 part connected to the platen and also connected to a finger-key, and adapted to normally lock the platen against transverse motion; and 65 also adapted to transmit the movement of the

finger-key to the platen, to move it transversely, substantially as set forth.

38. In a type-writing machine, the combination with a shift-rail of a platen-frame adapted to be swung up and supported thereon; a 70 fixed stop, as 52; a finger-key connected to the shift-rail to actuate it; means for returning the shift-rail to normal position, and means connected to the key for cooperating with said 75 fixed stop to lock the shift-rail in normal position, substantially as set forth.

39. In a type-writing machine, the combination with a platen and a series of type-bars, each bearing a plurality of types, of a rock- 80 ing shift-rail frame; a rack device adapted to travel upon the shift-rail; a transversely-floating power-driven platen-frame hinged to the rack device, so that it may be swung up to exhibit the writing; a finger-key connected to 85 the rocking shift-rail frame to actuate it; means for returning the shift-rail frame to normal position, and means, connected to the key, for normally locking the rocking shift-rail frame in normal position, substantially 90 as set forth.

40. In a platen-shifting mechanism of a type-writing machine, the combination of a rock- 95 ing shift-rail frame arranged back of the platen and provided below its pivot with an integral downwardly-extending arm; and a swinging device pivoted in the base beneath the arm, 100 and having a part that extends up to the arm to actuate it, and having also a part that extends to the keyboard and bears a key, substantially as set forth.

41. In a platen-shifting mechanism of a type-writing machine, the combination of a rock- 105 ing shift-rail frame; an actuating-arm therefor, pivoted in the framework of the machine; a detent device pivoted to the arm and having also a bearing thereon; and a finger-key connected to the detent device, substantially as 110 set forth.

42. In a platen-shifting mechanism of a type-writing machine, the combination of a rock- 110 ing shift-rail frame; an actuating-arm therefor, pivoted in the framework of the machine; a detent device pivoted to the arm and having also a bearing thereon; a spring for sustain- 115 ing the detent device in normal position; and a finger-key connected to the detent, substantially as set forth.

43. In a platen-shifting mechanism of a type-writing machine, the combination of a rock- 120 ing shift-rail frame; an actuating-arm therefor, pivoted in the framework of the machine; a detent device pivoted to the arm and having a bearing thereon; a spring for holding the detent in normal position; a projection arranged upon the detent device; an obstruction 125 arranged on the framework in proximity to the projection; and a finger-key connected to the detent device, substantially as set forth.

44. In a platen-shifting mechanism of a type-writing machine, the combination of a 130

rocking shift-rail frame provided below its pivot with a depending arm; a vertically-arranged arm pivoted at its lower end in the base of the machine and at its upper end engaging the depending arm to actuate it; an elbow device pivoted to the vertically-arranged arm and having a bearing upon a projection arranged thereon; a spring for sustaining the elbow device; a guide-post arranged upon the framework for the forward end of the elbow device; a lateral pin arranged upon the elbow device immediately behind the guide-post; and a key mounted upon the forward end of the elbow device, substantially as set forth.

45. In a platen-shifting mechanism of a type-writing machine, the combination with a shift-key lever of a horizontally-swinging switch-lever arranged in proximity to the shift-key lever, and provided with wedging means for depressing and locking the shift-key lever in its depressed position, substantially as set forth.

46. In a platen-shifting mechanism of a type-writing machine, the combination with a shift-key lever of a horizontally-swinging switch-lever arranged in proximity to the shift-key lever, and provided with wedging means for depressing and locking the shift-key lever in its depressed position, and provided also with a spring, substantially as set forth.

47. In a platen-shifting mechanism of a type-writing machine, the combination with a shift-key lever of a horizontally-swinging switch-lever arranged in proximity to the shift-key lever, and having a wedge for locking the shift-key lever in its depressed position; and a fixed plate arranged on the framework contiguous to the wedge, to afford a bearing for the wedge, substantially as set forth.

48. In a platen-shifting mechanism of a type-writing machine, the combination with a shift-key lever of a switch-lever arranged in proximity to the shift-key lever, and adapted to lock the shift-key lever in its depressed position; and a returning-spring for the switch-lever; the whole being so constructed and arranged that upon flexure of the depressed shift-key lever the spring will return the switching-lever to normal position, substantially as set forth.

49. In a type-writing machine, the combination with a platen and a shifter-bar thereof of a detent-lever connecting the shifter-bar to the key; and a fixed stop, as 52; the construction and arrangement being such that, when forced in one direction by the pressure applied at the key, the detent-lever moves the shifter-bar; and such that, when forced in another direction by pressure applied at the shifter-bar, the detent-lever coacts with said fixed stop to check the movement of the shifter-bar; substantially as set forth.

50. In a type-writing machine, the combination with a platen-frame, of a pivotally-supported frame to which said platen-frame is hinged in rear and by which said platen-frame is guided in its longitudinal movements, means for shifting said pivotally-supported frame and said platen-frame together transversely, and mechanism for locking said pivotally-supported frame in either of its shifted positions so that it cannot vibrate upon its pivots when the platen-frame is swung up to exhibit the writing.

Signed at Elizabeth, in the county of Union and State of New Jersey, this 30th day of December, A. D. 1896.

BURNHAM C. STICKNEY.

Witnesses:

B. H. MARSH,
JOSEPH F. JAQUITH.