

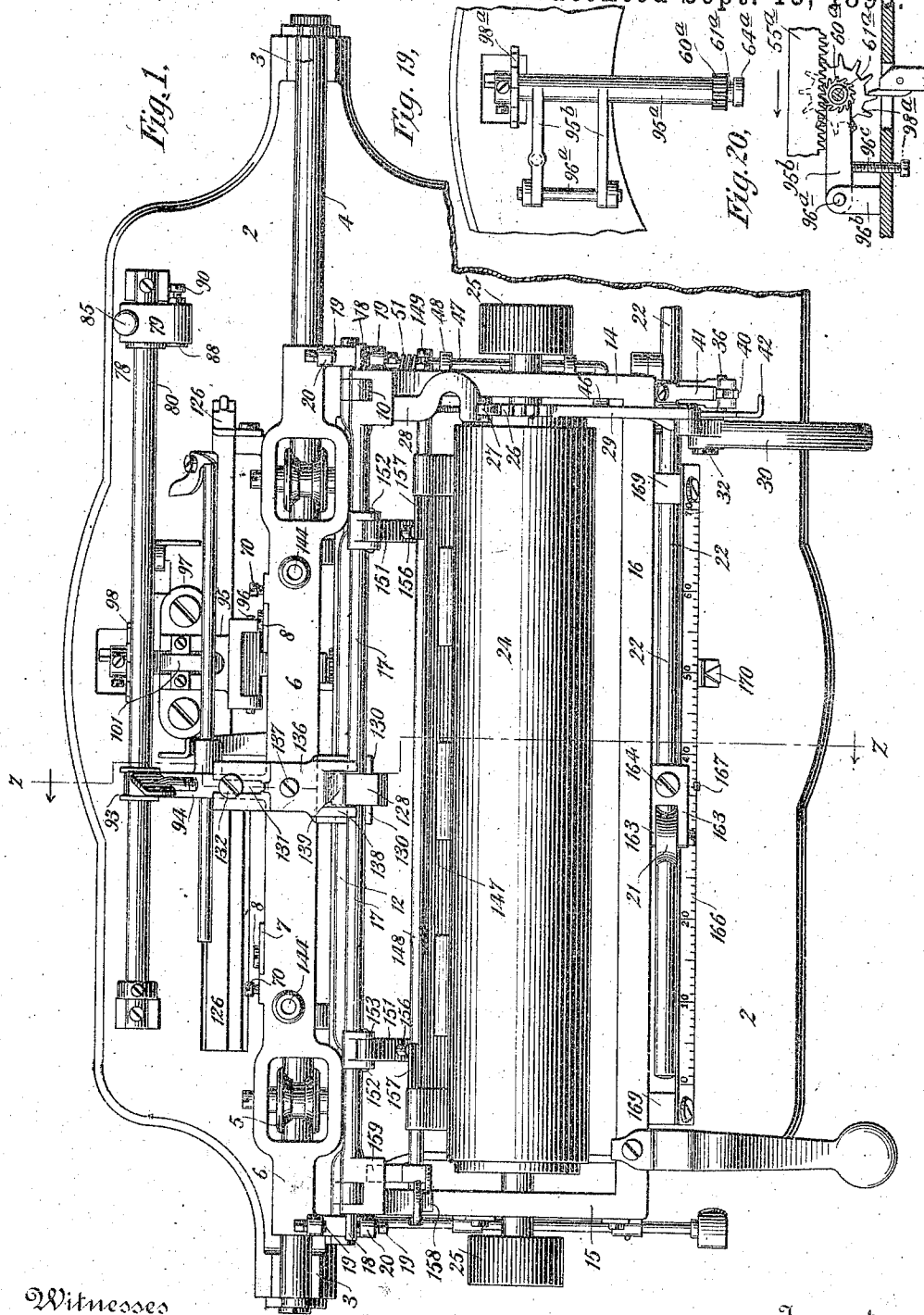
(No Model.)

4 Sheets—Sheet 1.

G. B. WEBB.
TYPE WRITING MACHINE.

No. 567,799.

Patented Sept. 15, 1896.



Witnesses
E. Ashley
H. W. Rind.

Inventor
George B. Webb
By his Attorney
Jacob F. Fitch

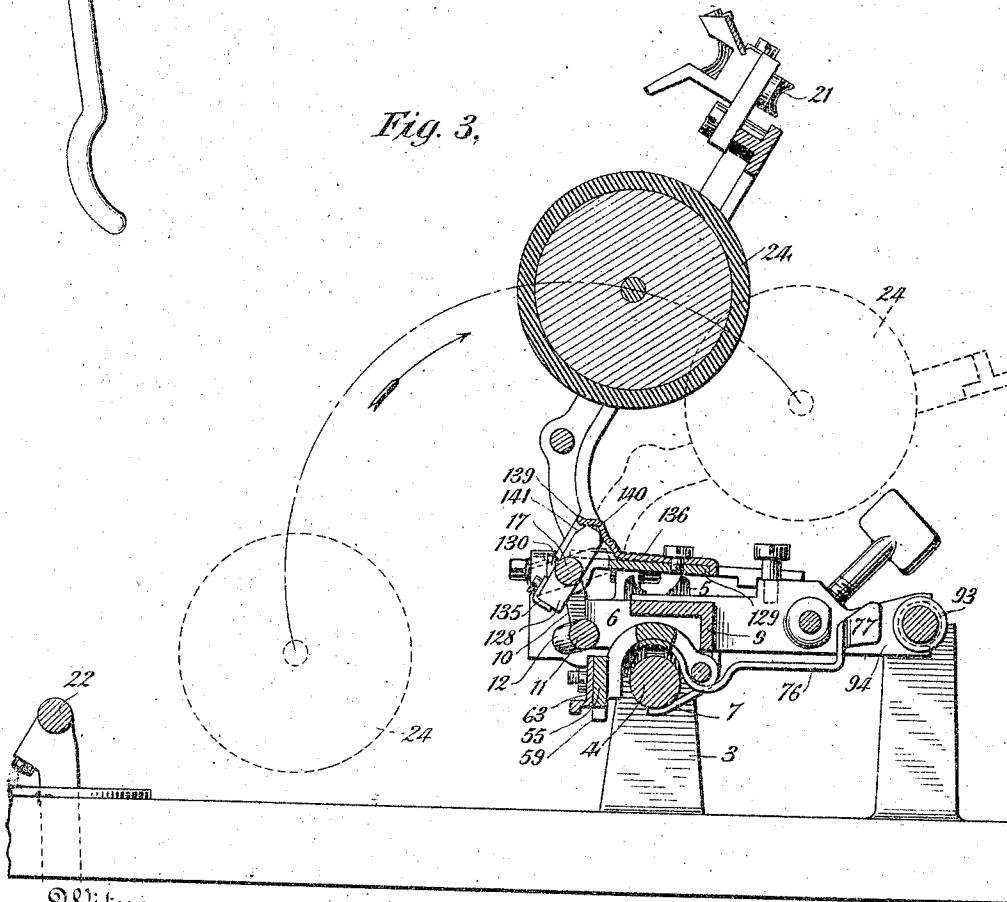
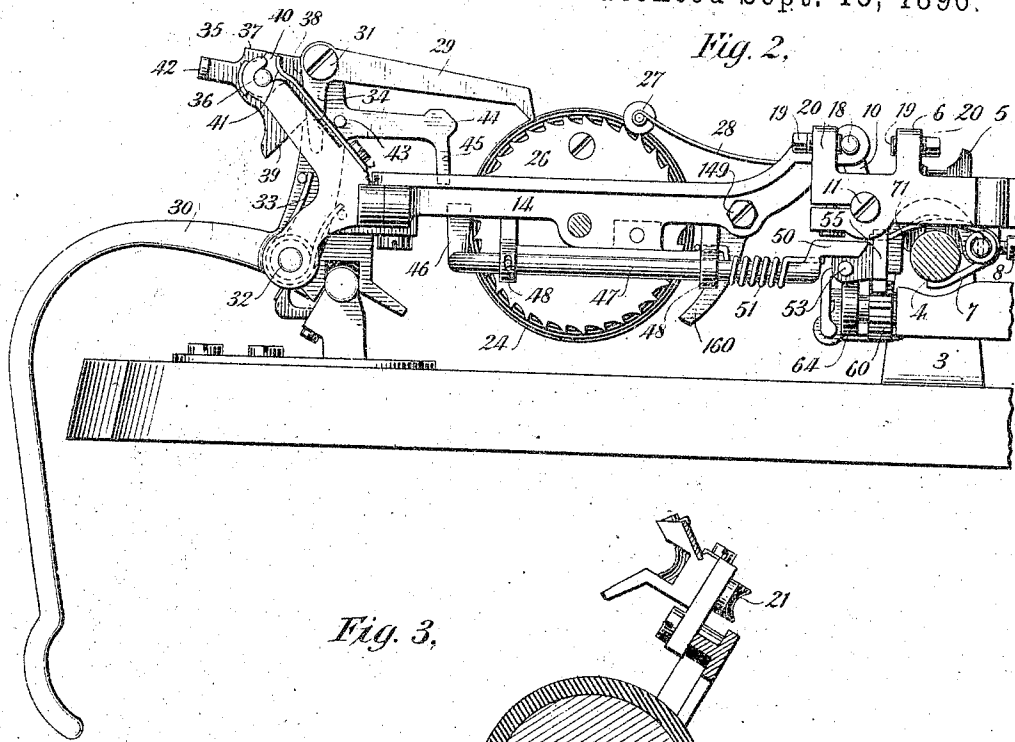
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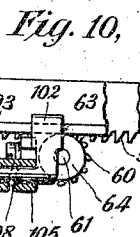
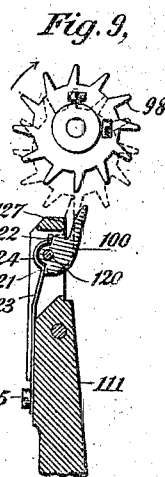
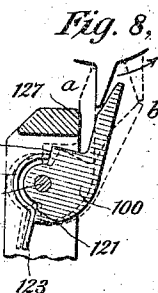
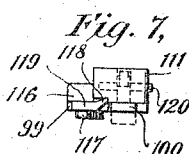
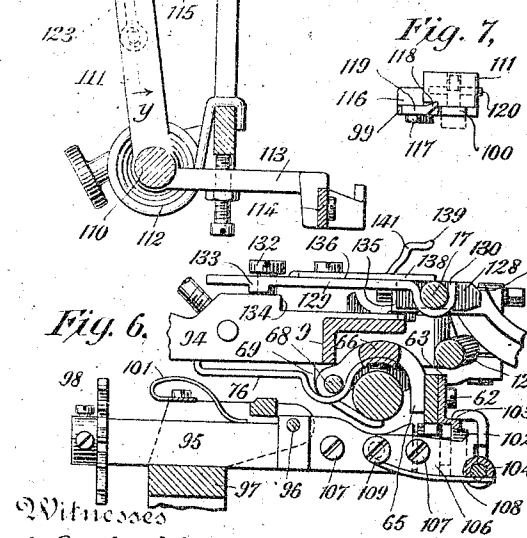
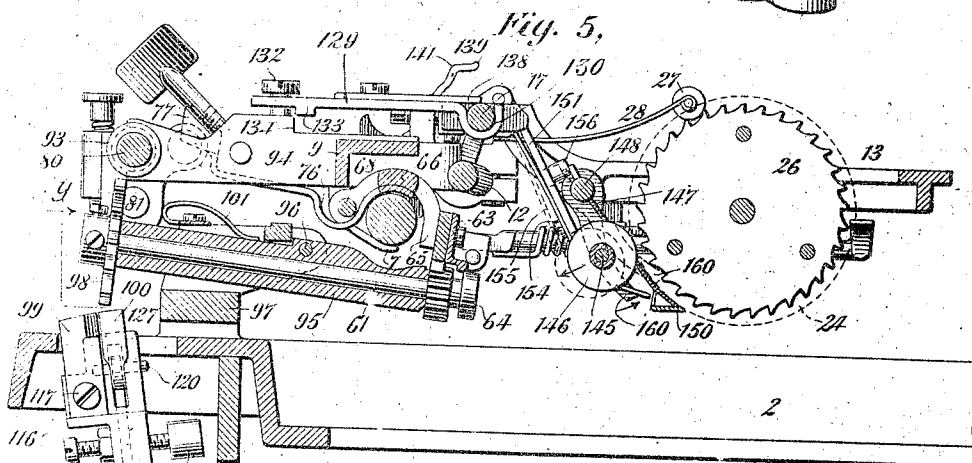
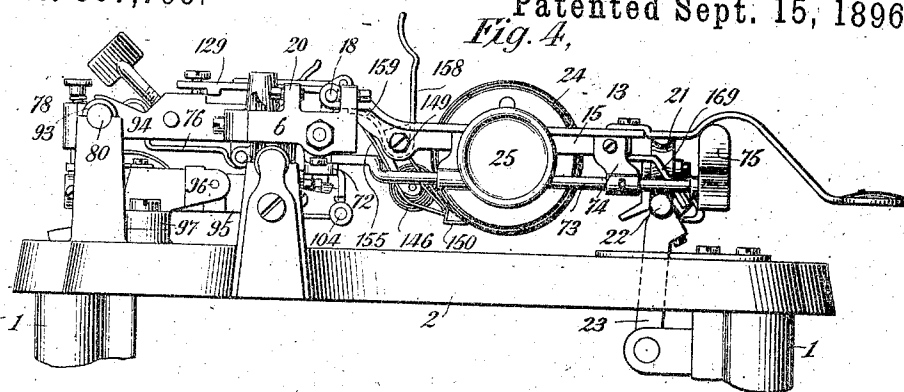
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4 Sheets—Sheet 3.

No. 567,799.

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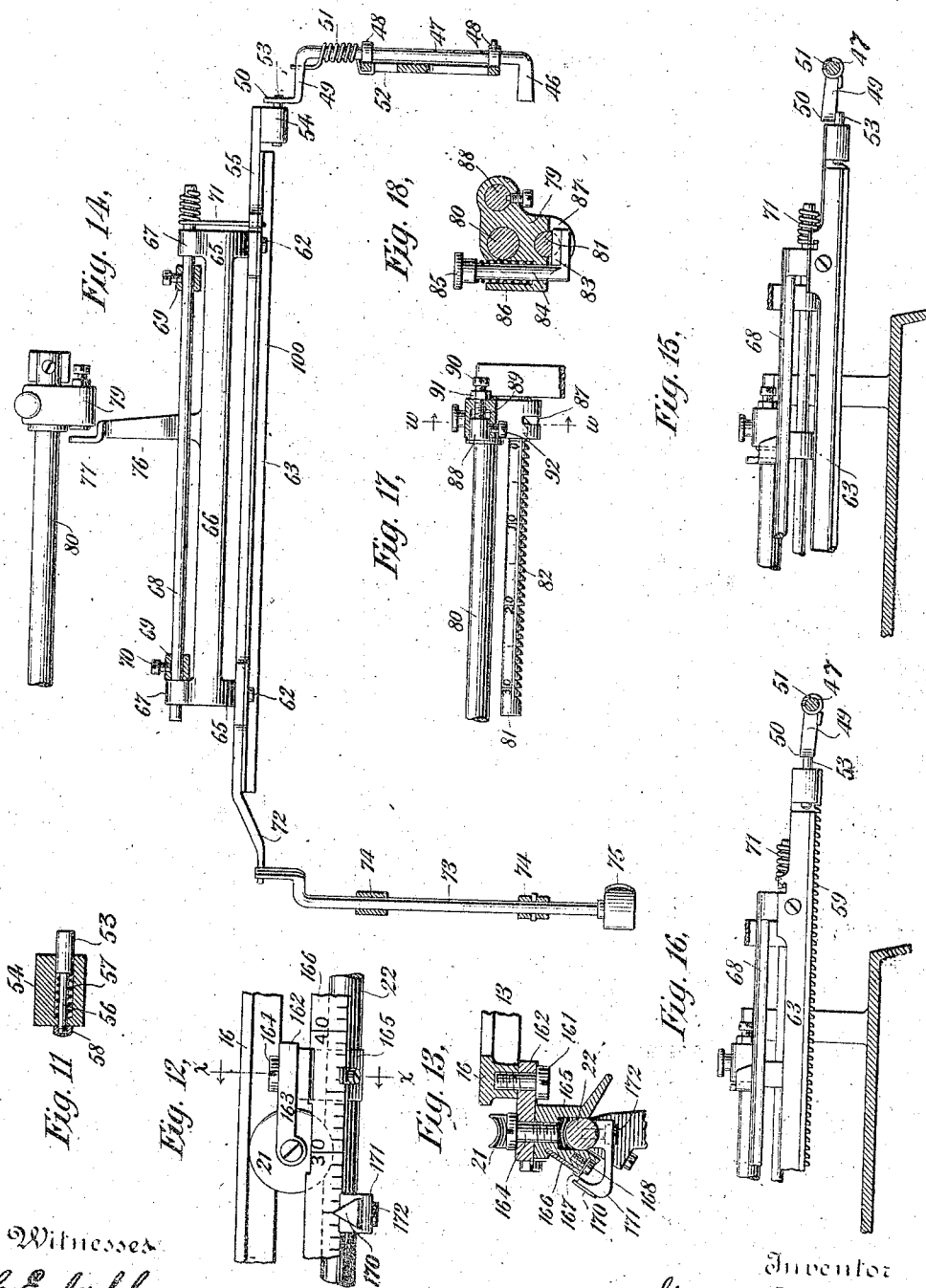
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No. 567,799.

Patented Sept. 15, 1896.



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UNITED STATES PATENT OFFICE.

GEORGE B. WEBB, OF NEW YORK, N. Y., ASSIGNOR TO THE WYCKOFF,
SEAMANS & BENEDICT, OF SAME PLACE.

TYPE-WRITING MACHINE.

SPECIFICATION forming part of Letters Patent No. 567,799, dated September 15, 1896.

Application filed December 27, 1894. Serial No. 533,064. (No model.) Patented in England December 27, 1894, No. 25,155.

To all whom it may concern:

Be it known that I, GEORGE B. WEBB, a citizen of the United States, and a resident of New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Type-Writing Machines, of which the following is a specification.

This invention has been patented in Great Britain under Letters Patent No. 25,155, dated December 27, 1894.

My present improvements in type-writing machines relate more particularly to the carriage letter-spacing or escapement mechanism; to means for separating or disengaging the members of the escapement devices forming part of the letter-spacing mechanism; to the line-spacing and carriage-returning mechanisms; to means for tripping the escapement mechanism during the end of the carriage-return movement; to the means for arresting the return movements of the carriage at varying points to produce different widths of margin; to means acting with the feed-roller for preventing the platen from turning backward when the paper is pulled, and to means for holding the platen-carrier forward when raised for inspection or correction of the work, &c.

The main object of my invention is to improve or render efficient said portions of the type-writer; and to this end my invention 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, Figure 1 is a top plan view of a type-writing machine embodying my improvements, the keyboard and other parts unnecessary to the understanding of my invention being omitted. Fig. 2 is an elevation, partly in section, taken at the right-hand end of the machine, considered from the front thereof. Fig. 3 is an enlarged vertical cross-section taken at the line *z z* of Fig. 1, but with the platen-carrier turned up. Fig. 4 is an elevation taken at the left-hand end of the machine. Fig. 5 is an enlarged vertical cross-sectional view showing the escapement devices separated and showing various other parts of the machine. Fig.

6 is a vertical sectional view of some of the parts shown at Fig. 5, but in different positions. Fig. 7 is a plan view of the escapement-dogs. Fig. 8 is an enlarged sectional view of the feeding-dog and part of the ratchet-wheel with which it coöperates, and showing more particularly the mode of mounting said dog. Fig. 9 is a sectional view taken at the line *y y* of Fig. 5. Fig. 10 is a front elevation, partly in section, of the spring hooking devices for the feed-rack and pinion. Fig. 11 is a vertical section of the spring-pressed pin at the right-hand end of the spacing-rack. Fig. 12 is a partial front elevation showing the front carriage-bracket, yoke, roller, shifter-bar, scale, pointer, &c. Fig. 13 is a vertical section taken at the line *x x* of Fig. 12. Fig. 14 is a top plan skeleton view of the carriage-stopping means, the rack-depressing means, the rack-tripping means, and their connected devices, and showing the positions of the parts just before the stoppage of the carriage and the tripping of the rack. Fig. 15 is a partial front elevation of the right-hand portions of the mechanisms shown at Fig. 14 and in the positions which they assume when the line-space lever is actuated and before the feed-rack is tripped at the end of the return movement of the paper-carriage. Fig. 16 is a similar view to the last mentioned, but showing the positions of the parts after the feed-rack has been tripped or released and while the pull on the line-space lever is still maintained. Fig. 17 is a front elevation, partly in section, of the carriage-stopping means or marginal stop contrivance, &c. Fig. 18 is an enlarged vertical section, taken at the line *w w* of Fig. 17, of the carriage or marginal stop, &c., and the rods therefor. Fig. 19 shows in plan view a modification of the means for lifting the ratchet-wheel from engagement with its dogs, and Fig. 20 is a sectional elevation of said means with the feed-rack added.

In the various views the same parts will be found designated by the same numerals of reference.

The machine illustrated herein, to which my improvements have been added, is that known as the "Remington Standard Type-writer No. 6," but of course some of my im-

provements may be applied to machines of other general construction.

Various features of construction shown but not claimed herein and now forming part of the said No. 6 type-writer are made the subjects-matter of the British Letters Patent No. 156, dated February 6, 1892, and some of the parts of my present invention have been devised to improve or render more perfect some of the parts shown in the said Letters Patent.

Upon the usual posts 1 is mounted the top plate 2, having at its sides lugs 3 for supporting the ends of a carriage-guide rail 4, on top of which run the grooved wheels 5 of the carriage 6, which is provided near each end with a hook or arm 7, that bears against the under side of the rail and prevents any lifting action of said carriage, the said hooks or arms being each attached by a screw 8 to the back vertical flange 9 of the carriage.

10 10 are two vibratory arms pivoted at 11 at each end of the carriage and connected together by a longitudinal rod 12. The arms 10 are pivotally connected at their upper ends to the platen-carrier 13, which is composed of side bars 14 and 15, a front bar 16, and a back bar 17. The rear ends of the side bars of the platen-carrier are provided with laterally-projecting pins 18, which play between screw-stops 19 in lugs 20, projecting upwardly from the carriage at each end, by which means the backward and forward vibrations or shifting movements of the platen-carrier are limited. The front side of the platen-carrier has a roller 21, which travels upon a shift-rail 22, attached to the upper ends of shifting levers or arms 23, pivoted to the framework and connected to a shift-key at the keyboard.

40 The platen 24 is adapted to rotate freely in the side bars of the carrier, and at each end is preferably provided with a hand-wheel 25. At the right-hand end of the platen is attached a toothed or ratchet wheel 26, upon which bears at all times a small roller 27 on the front end of a spring 28, attached to the rear end of the side bar 14, said roller by its pressure preventing the platen from rotating in either direction accidentally during the writing.

The platen is adapted to be rotated by the line-spacing mechanism, of which 29 is the driving-pawl and 30 the line-space lever, to which the pawl is pivoted at 31, the lever being pivoted at 32 in a downward extension of the side bar 14, and provided thereat with a coiled spring 33, having a tendency to throw the line-space lever outwardly when released. The driving-pawl is provided with a tailpiece or downward extension 34, adapted to be acted upon by a line-space regulator 35, pivoted at 36 and having three sides or faces 37, 38, and 39 arranged at different distances from the pivot, so that the outward movement of the line-space lever and driving-pawl may be arrested at three different points, according as the regulator is turned relatively to the tail-

piece of the driving-pawl, and so that when the line-space lever is actuated the platen may be rotated one, two, or three notches or teeth of the ratchet-wheel, as may be desired. The object of the tailpiece of the pawl is to effect the disengagement of the point of the pawl or ratchet-wheel on the return of the line-space lever to its normal position, the said tailpiece striking against one of the faces of the regulator and operating to throw the pawl upwardly just before the completion of the return movement of the line-space lever, which movement is arrested by the said regulator.

The notched wheel or disk 40 on the axis 36 accommodates a spring 41, by which the regulator is held in any position to which it may be adjusted by the finger-piece 42. A pin 43 on the line-space lever limits the upward vibration of the tailpiece and the pawl, and projecting from the line-space lever inwardly is an arm bearing at its extremity a tooth 44 to engage the spaces of the ratchet-wheel at the completion of the line-space action and thereby prevent any overthrow of the platen by inertia. Extending downwardly from this arm is a finger 45, adapted to engage with the inwardly and upwardly projecting arm 46 of a rock shaft or lever 47, mounted in suitable bearings 48, depending from the side bar 14, and having at its rearmost end an inwardly-projecting arm 49 and a rearwardly-projecting finger 50.

51 is a returning-spring surrounding the rock-shaft and attached at one end to a bracket 52, containing the bearings 48, said spring being adapted to return the rock-shaft to its normal position after having been actuated by the finger 45 and during the return movement of the latter.

The finger 50 normally overlies a pin 53, projecting laterally toward the right from a bearing 54 on the end of the feed-rack 55. The said pin 53 is adapted to slide within the said bearing and is formed with a reduced shank or stem 56, which is surrounded by a coiled spring 57 and provided exteriorly with a threaded nut 58, the said spring acting to keep the pin 53 normally projected, as shown more particularly at Fig. 11. The purpose of this yielding or spring-pressed pin will be hereinafter explained.

The rack-bar 55 is provided with a series of teeth 59 on its under side, which are maintained in engagement at all times with a pinion 60 on a shaft 61, arranged under the guide-rail 4 and at right angles thereto.

On the front side of the rack-bar 55 is attached by screws 62 an angle-bar 63, the horizontal member or rib of which is adapted to bear and ride upon a small roller 64 fast on the front end of the shaft 61. The said screws 62 pass through the feed-rack and enter the curved and downwardly-terminating arms 65 of a frame composed of said arms and a connecting-bar 66, which is pivoted or hinged at 67 upon a rod 68, supported in lugs 69, depend-

ing from the carriage and held in place therein by set-screws 70. Said rack-bar frame is provided with a spring 71, having a downward and lateral tendency.

5 The rack-bar 55 has a laterally-extending arm 72 adapted to be acted upon by the rearmost end of a rock-shaft 73, supported in hangers 74, depending from the left-hand side bar 15 of the platen-carrier and provided at
10 its front end with a finger-piece 75, the said rock-shaft being designated, usually, as a "release-key."

The bars 65 are bent to pass over the guide-rod 4 and the connecting-bar 66 stands directly
15 above said guide-rod. Attached to this connecting-bar 66, on its under side, and bent twice in opposite directions to pass over the guide-rod and under the hinge-rod 68 is an arm 76, which extends rearwardly at right
20 angles to the connecting-bar 66 and from about the center thereof, and which at its free rearmost end is bent or formed to provide a vertical contact-piece 77 to coöperate with a margin-stop device 78. This device consists
25 of a block 79, perforated transversely to slide on a rear carriage-guide rod 80 and on a short parallel stop-rod 81, provided on its under side with a series of teeth 82, Figs. 17 and 18, corresponding in distance apart to the teeth of the feed-rack and adapted to receive in the
30 spaces between the teeth the beveled edge of a finger 83, projecting inwardly from a vertical stem 84, which slides in a housing in the rear side of the block and which is provided with a finger-piece 85, extending above the block, and with a coiled spring 86, having an upward pressure and adapted to hold the said beveled finger of the L-shaped catch device normally in one of the spaces of the toothed
35 bar 81, the block being bifurcated, as at 87, to accommodate said finger. By reason of the passage through the block of the two rods 80 and 81 the block is prevented from rotating.

On the inner side of the block and at its
45 upper portion is provided an adjustable pin, head, or contact-piece 88, Fig. 17, which projects toward the left slightly beyond the face of the block and which is adapted to be struck by the contact-piece 77. This pin or head 88
50 is cylindrical in form and is adjustable lengthwise in a housing 89 by means of an independent screw 90, having a set-nut 91, in addition to which there is employed a set-screw 92, passing upwardly into the housing and bearing at its point on the pin, whereby the
55 pin is held firmly in any adjusted position. By having the contact part 88 of the margin stop or regulator independently adjustable wear may be provided for, and at the same
60 time the contact-piece 77 may be arranged to strike the pin or contact-piece 88 at the proper or most desirable time in the returning movement of the carriage, the contact of the said parts 77 and 88 taking place just before the carriage is arrested and tripping or releasing the rack and letter-spacing mechanism, all
65 as will be presently more fully explained.

The margin-stop, it will be understood, may be adjusted to any desired position within the length of the rod 81, which for convenience
70 is graduated to correspond with the machine-scale.

Upon the rod 80 is a flanged thimble 93, Fig. 5, with which engages between the flanges the rear forked end of an arm 94, projecting
75 rearwardly from the back flange 9 of the carriage and formed integral therewith and constituting a part of the carriage. The said arm with its thimble and the rod 80 assist the rollers 5 and the rod 4 in the accurate
80 guiding of the carriage during its longitudinal movements.

The shaft 61 passes through a long support, sleeve, or bearing 95, which is horizontally pivoted at 96 in a stand or bracket 97, at-
85 tached to the top plate, and the rearmost end of said shaft is provided with a ratchet or escape wheel 98, adapted to be engaged alternately by two dogs 99 and 100. A spring 101, attached at one end to said bracket and bearing
90 at its other end upon the top of the shaft-support in rear of its pivot, acts to hold said ratchet-wheel and dogs normally in engagement.

The rack and pinion are maintained in en-
95 gagement at all times by the gravity of the rack and its frame, assisted some by the downward tension of the spring 71. This engagement between the rack and pinion is insured, however, by means of a hook 102, Fig. 6, which
100 clasps the upper side of the horizontal flange or ledge 103 of the angle-bar 63, which bears upon the roller 64. The said hook is bent laterally to provide a horizontal pivot 104, which is fitted in a bearing 105 at the forward
105 end of a bracket 106, fastened by screws 107 upon the innermost end of the tilting frame or support 95. This pivoted hook 102 is provided with a spring 108, one end of which is attached to a screw 109 and the other free
110 end of which bears in a groove or cut-away on the under side of the pivot 104 and operates to hold the hook normally in an upright position and upon the flange or ledge. By the use of this device an accidental separation
115 of the rack and pinion is prevented when the carriage is returned and caused to strike its margin-stop violently. At the same time when it may be desired to remove the carriage from the machine the said hook may be
120 turned down about its pivot to a horizontal position, whereby the rack and pinion may be easily separated.

The primary object of having the escapement-wheel and pinion-shaft arranged to tilt,
125 swing, or vibrate is to enable a certain defect in the prior construction to be remedied. In the said prior construction the said shaft had merely a rotatory motion, and in order to re-
130 lease the carriage from its pinion the rack was lifted independently of the pinion; or, in other words, the line of separation was at the rack and pinion. In practice this was found to be objectionable, in that when the

rack was lifted from the pinion and the carriage was returned to the right, owing to the shock and consequent displacement of the parts, the rack would not always fall onto the proper tooth of the pinion, and hence the carriage would not be arrested and recommence the line of printing at the desired point or locality. For instance, the carriage-stop might have been set to arrest the carriage at "0" on the scale; but owing to the aforesaid shock and displacement the pinion would engage at a point on the rack, say, corresponding to "1" on the scale, and hence the carriage would be arrested and commence its travel from the last-mentioned point instead of from "0," as desired. With the new construction, however, involving the lifting of the escapement-wheel from the dog, this objection is entirely cured.

The rack and pinion being always in engagement, there is no liability of displacement between the teeth of these two devices, and the distance between successive teeth on the escapement-wheel being much greater than the thickness of the dog there is little or no likelihood of the escapement-wheel engaging with the dog at a wrong tooth or notch of the escapement-wheel when the escapement-wheel and dog are permitted to enter into reengagement.

Pivoted at 110 in a part of the general framework is a dog holder or rocker 111, which is in the form of an arm and, extending upwardly, bears at its free end the rigid or holding dog 99 and the yielding or feeding dog 100. At the axis of the dog-holder is arranged a returning-spring 112, of the usual construction and arrangement, and from said axis projects inwardly an arm 113, to a cross-bar 114 of which is attached at one end the wires or rods by which the universal bar is arranged beneath the key-levers, common in prior machines and not necessary to be illustrated or further explained herein.

The dog holder or rocker 111 is provided with an adjustable stop 115 on a screw-stem, by which the forward vibrations of said rocker or holder are limited.

The upper end of the dog-holder is formed with a rearwardly-extending ear 116, to which is attached by a screw 117 the rigid dog 99, Figs. 7, 8, and 9. This dog consists, essentially, of a small flat plate, the upper working end of which has a beveled or inclined portion or tooth 118 and a straight portion or tooth 119, the latter being parallel with the sides of the plate and the former bent at an angle thereto and toward the right, viewed from the front of the machine. This bent or angular portion 118, in connection with the escapement-wheel 98, effects a quick release and feed of the carriage.

The loose or flexible dog 100 is pivoted at 120 upon the said rocker or holder 111, and is formed with two flat shoulders or faces 121 and 122, one above and one below the said pivot 120. Bearing upon these faces 121 and

122 is a spring 123, curved or hook-shaped at its upper end, as at 124, and secured to the rocker at its lower end by a screw 125.

When the escapement-wheel is raised, the hook-shaped end of the spring presses against both of the faces 121 and 122 and causes the beveled or working end of the dog 100 to stand in the position shown by the full lines at Fig. 8, which position is a central or intermediate one, the dog being adapted to be moved to either of the two dotted-line positions also shown at said figure. When the dog is moved to the dotted-line position *a*, the pressure of the spring upon the face 121 is removed, and hence when the dog is released from this position the upper end of the spring, acting upon the face 122, returns the dog to the full-line or intermediate position, at which the spring bears upon both of the said faces, serving thereby as a stop to the movement of the dog and to centralize the same. When the dog is moved to the dotted-line position *b*, the upper face 122 is swung away from the upper end of the spring, so that when the dog is thereafter released the spring, acting upon the face 121, will serve to return the dog to its central normal position again.

The operations of the escapement devices, including the tripping action of the feed-rack, &c., will now be more particularly described.

The escapement-wheel and pinion-shaft with its bearing or support is tilted or vibrated to separate the escapement-wheel and the dog 100 by either of the two rock shafts or levers attached to the platen-carrier, the one at the left-hand side thereof (designated by the numeral 73) being known as the "release-key" and the one at the right-hand side operating only in conjunction with the line-space lever 30. When the finger-piece 75 of the release-key is vibrated toward the right and pushed down, the feed-rack is caused to swing upon its axis of motion—the rod 68—and in this swinging movement, through its engagement with the pinion, to tilt or vibrate the shaft 61 and cause the escapement-wheel to rise above the plane of the escapement-dog, or to the position shown in full lines at Figs. 5 and 9. When the release-key is thus actuated and the escapement-wheel elevated, the carriage and platen-carrier may be moved quickly in either direction by the hand toward the right or by the driving power toward the left, which driving power may consist of the usual spring-drum, (not shown, but connected to the carriage by a belt or band 126 in the usual manner.)

When the line-space lever is vibrated to effect the line-spacing of the platen simultaneously with the return movement of the carriage for the beginning of a new line, the right-hand rock-shaft 49 is turned and through the connections described the escapement-wheel is lifted or disengaged from the escapement-dog.

Referring more particularly to Fig. 14, it will be observed that there is a space between the right-hand curved arm 65 and the right-hand lug 69. This space is provided to enable the carriage (of which the lug 69 forms a part) and the platen-carrier (connected to the carriage) to move slightly farther toward the right after the contact-piece 77 has struck the head or pin 88 for the purpose of releasing, tripping, or disengaging the feed-rack devices from the carriage and platen-carrier, in order that the escapement-wheel may drop into engagement with the escapement-dog in advance of the completion of the carriage-returning movement. The spring 71, coiled about the right-hand end of the rod 68 and extended over and attached to the feed-rack, as shown at Fig. 14, has a tendency to keep the rack normally to the limit of its right-hand movement, or, in other words, with the left-hand arm 65 against the left-hand lug 69.

The tripping or releasing action of the feed-rack will now be more minutely described and in connection more particularly with Figs. 5, 14, 15, and 16.

At Figs. 14 and 15 the parts are shown in the same positions, and these views illustrate the returning movement of the carriage and its connected parts after the line-space action and while the line-space handle is held up by the operator, at which time it will be understood the finger 50 of the rock-shaft 47 is bearing down upon the pin 53 and the escapement-wheel is in its raised position. Now, with the parts in this condition, when the contact-piece 77 strikes the head or pin 88 the feed-rack and its rigidly-connected parts are arrested, while the carriage and the platen-carrier continue a short distance farther toward the right and until the arm 94 comes against the left-hand side of the contact-piece 77, thus arresting the carriage. During this slight additional movement of the carriage the finger 50 slides off the pin 53 and thus releases the feed-rack and its connected parts and permits the escapement-wheel to descend into engagement with the escapement-dog 100 under the action of the spring 101, the feed-rack and pinion simultaneously rising.

At Fig. 16 the finger 50 is shown as having slipped off of the pin 53. When this disengagement occurs, the carriage and the platen-carrier should move slightly toward the left under the action of the spring-drum or driving power to renew their proper relationship to the feed-rack, but if after the automatic release of the feed-rack and before the carriage and platen-carrier make this slight return movement toward the left the line-space lever be not released the rack would be forced toward the right and cause a jamming or pressure between the finger 50 and the end of the pin 53, if such pin were made rigid instead of yielding, as shown. When the condition of affairs just described occurs, the

finger 50 will force the pin inwardly against the action of its spring 57 a distance equal to the rebound or return movement of the platen-carrier, thereby avoiding any locking or jamming of the parts, which would injuriously affect the machine or throw its parts out of proper working position. As soon as the line-space lever is released after this rebound of the platen-carrier the finger 50 is thrown upwardly by the spring 51 and the pin 53 is pushed outwardly again by the spring 57.

It will be understood, of course, that the rack may be depressed by the means described in connection with the line-space lever and released therefrom and from the carriage by means of the tripping-arm 76 and its contact-pieces without the employment of the spring or yielding pin 53, but as the said pin performs the described highly useful function in the mechanism its use is therefore preferred for this reason.

The main object of this automatic tripping or releasement of the rack is to enable the escapement-wheel and dog to automatically re-engage or come into proper working position before the completion of the rebound of the carriage, in order that the feeding mechanism shall positively be in readiness for action before and irrespective of any releasement of the line-space lever, and hence before the commencement of the work at the keyboard.

Referring now more particularly to Figs. 5, 7, 8, and 9, I shall now more particularly describe the letter-spacing or carriage-feeding action.

Normally, or when the machine is in disuse, the yielding spring-pressed feeding-dog 100 stands in engagement with the escapement-wheel, which under the driving power and through the intermediate rack and pinion has a tendency to rotate in the direction of the arrow at Fig. 9, but said rotation is prevented at this time by reason of the right-hand side of the dog bearing against a stop 127, forming a part of the rocker 111.

When the finger-key connected with the type-bar (not shown) or the spacing mechanism is actuated, the dog 100 is rocked forward out of the plane of the escapement-wheel and the rigid dog 99 is by the same operation moved into the plane of said wheel and into the space between two of its teeth to check the rotation of said wheel and prevent any movement at this time of the paper-carriage. As soon as the feed-dog 100 passes out of the escapement-wheel its spring 123 operates to vibrate said dog toward the left or into the intermediate position shown by the full lines at Figs. 8 and 9. When said finger-key is released, the dog 100 passes into the next space or notch of the escapement-wheel, and as the rigid dog moves back out of engagement with said wheel the latter, being unrestrained, may make a partial rotation in the direction of the arrow at Fig. 9, during which the dog 100 is vibrated toward the right

and against its stop 127, while simultaneously the carriage is moved or fed through the rack and pinion only one letter-space distance.

In the backward-rocking movement of the dogs the beveled or inclined portion of the rigid dog has a peculiar mode of operation, whereby the carriage may be fed in a shorter space of time than heretofore, but inasmuch as this improvement is the invention of another I need not further refer thereto. As far as my present improvements are concerned an ordinary straight dog may be employed with equal advantage.

When the carriage is returned or moved toward the right, the escapement-wheel, through the rack and pinion and the shaft, is rotated in the direction shown by the arrow at Fig. 8, and, owing to the contact of the free ends of the teeth of the escapement-wheel with the beveled side of the feeding-dog 100, the latter is vibrated and depressed to the dotted-line position shown at *b* by each successive tooth upon the escapement-wheel. As soon as the right-hand pull on the carriage is released the driving power of the carriage moves it slightly in the reverse direction or toward the left, thus giving the escapement-wheel a partial rotation in the reverse direction or in the direction indicated by the arrow at Fig. 9, which operates to carry the dog 100 back to its normal position against the stop 127.

It will be observed from Figs. 8 and 9 that the dog 100 is moved in one direction by the escapement-wheel in the forward movement of the carriage and in the opposite direction by the escapement-wheel in the return movement of the carriage. From the foregoing the advantage of having the dog 100 capable of occupying three different positions will be apparent. The essence of this part of the improvement consists in a construction wherein the dog when out of the escapement-wheel or unacted upon may occupy a central or intermediate position, so that when it is vibrated back into engagement with the escapement-wheel and is acted upon thereby it may move to the right of said intermediate position, but when the carriage is being returned and the escapement-wheel rotated in the opposite direction the dog may be moved toward the left from its intermediate position in order to facilitate the return of the carriage. This construction and operation of the dog involves the employment of some movable stopping means for holding the dog in the central or intermediate position, and I have found in practice that the hook-shaped spring bearing upon the two faces 121 and 122 not only serves to hold the said dog in the said intermediate position, but also acts to return the dog to said position when vibrated to either the right or the left thereof.

It will be observed when the escapement-wheel is raised from engagement with the dog 100 by means of either the release-key or the line-space lever through the connections hereinbefore described that, owing to the re-

moval of the lateral or side pressure upon said dog by said wheel, due to the driving power, the spring 123 of the dog 100 acts to vibrate said dog toward the left and to the said intermediate position, as illustrated at Fig. 9, and hence when the carriage is stopped and the hand is removed from the release-key or the line-space lever, as the case may be, the escapement-wheel will drop down into engagement with said dog while the latter is in a central position, but will instantly carry said dog back against its stop 127, owing to the partial revolution of the escapement-wheel under the force of the mainspring or driving power, thus feeding the carriage at this moment one letter-space, which movement may represent the rebounding distance of the carriage when the rack is tripped and the carriage stopped against the margin-stop contrivance hereinbefore referred to.

The several improvements in or upon the platen-carrier will now be described.

The shifting movement of the platen-carrier between the stops 19 of the carriage for printing upper-case types has been hereinbefore referred to. Owing to the construction by which this shifting movement is obtained, heretofore when the platen carrier was raised to inspect the work, as at Fig. 3, the rocker-arms 10 would swing rearwardly and when the platen was lowered they would swing forwardly again and rather violently in both directions. To prevent this action in the rising and lowering of the platen the following locking means have been provided: At about the middle of the back rod 17 of the platen-carrier is secured a block 128, which, when the platen-carrier is down in working position, stands in a horizontal plane, as shown at Figs. 5 and 6. A plate 129 is loosely connected to said back rod 17 by means of two upturned hooks 130, the plate being cut away between said hooks to accommodate the block. The rear end of said plate is slotted at 131, and through this slot passes vertically a screw 132, which takes into a tapped hole in the arm 94, the head of the screw being larger in diameter than the width of the slot to limit the upward movement of the rear end of the plate. On the under side of the plate and on each side of the slot is a lug 133, adapted to bear against a shoulder or wall 134, formed on the upper side of said arm 94. The rear end of the block is provided with an angle-piece 125, attached by a screw, which piece, when the platen-carrier is down in working position, bears on the under side of the plate at its front end and serves to hold said plate in an elevated position and with the lugs 133 out of the plane of the shoulder or wall 134, as shown at Fig. 5, so that the platen-carrier may be readily shifted back and forth by the shifting-key for upper and lower case printing, these movements being permitted by reason of the slot 131 in the plate, which is of a length slightly greater than the throw of the platen-carrier. The

positions of the parts during the rearward shifting movements is shown at Fig. 6. When, however, the platen-carrier is turned up for inspection of the work, as at Fig. 3, the axis of motion being coincident with the rod 17, the angle piece or lifter 135 swings downwardly and simultaneously the plate drops by gravity and the lugs thereon fall in front of the shoulder or wall 134. This action takes place during the first part of the upturning movement of the platen-carrier. During the remainder of such movement the angle-piece or lifter moves entirely away from the plate and to the position shown at Fig. 3. It will be seen that by this construction and operation the platen-carrier is so locked or latched at the beginning of the movement to swing it up to inspect the work as that the rocker-arms 10 and back rod 17 are prevented from moving rearwardly at this time, and hence the pins 18 are maintained against the front stops 19.

During the turning-down movement of the platen-carrier when the device 135 arrives at the plate 129 it acts to lift the same and raise the lugs 133 above the top of the shoulder or wall 134, and thus restore the parts to the positions shown at Fig. 5.

The hooks 130 are prevented from falling from the rod 17 by a top piece or plate 136, which is secured thereto by a screw 137, this plate having forwardly-projecting fingers 138, which rest upon the top of said bar in the plane of the hooks. This top piece or plate 136 also performs the office of locking or holding the platen-carrier in its upturned position, the said plate being provided with a forwardly-projecting spring-tongue 139, bent at its forward end to form a notch 140 for the front beveled end 141 of the block 128.

As will be seen at Fig. 3, when the platen is turned up the said tongue snaps upon the forward end of the block 128 and with sufficient force to hold the platen-carrier in its raised position, but not so firmly as that the platen may not be forced back still farther, so as to bring the platen down upon the paper-table, which is supported by posts entering the holes 144 in the carriage. The platen is pressed down onto the paper-table or to the rearward dotted-line position shown at Fig. 3 (at which the paper-table is omitted for the sake of clearness) only when it may be desired to secure a very firm support, as in the making of erasures by rubbing, &c.

145 is the shaft or axis of the feed-roller 146, which may be made in sections and to protrude through openings in a metallic apron or guide-plate 147, secured at its upper end to a rocking rod 148, extending across the platen-carrier and attached to the side bars thereof by screw pivots or centers 149 at its ends, the said apron or guide-plate being preferably provided at its lower edge with a pressure-bar 150, which may be graduated and marked to form a scale corresponding to the letter-spacing of the carriage.

The feed-roller axis or shaft is supported in bearings in the lower ends of arms or links 151, which are pivoted at 152 in ears 153 on the back rod 17. On the under side of each arm is attached by screws 154 a plate-spring 155, which bears at its upper end against a lug on the back rod 17 and which terminates at its lower end at near the pressure or scale bar 150. The purpose of these springs is to hold the feed-roller against the platen or the paper thereon with the requisite degree of pressure.

Upon the upper side of each arm 151 is a pin 156, and opposite thereto on the rocking shaft 148 is a wing or lug 157, while at the left-hand end of said shaft preferably is affixed a handle or lever 158, having a rearward extension 159, adapted to bear against the under side of one of the forks at the rear end of the left-hand side bar 15 of the platen-carrier. When the handle is pushed rearwardly, the shaft 148 is rocked, and by means of the wings acting upon the pins the arms 151 are vibrated slightly rearwardly against the tension of their springs and the feed-roller is moved away from the platen or the paper thereon, as indicated by the dotted lines at Fig. 5. By this construction provision is made for the easy introduction and removal of the paper as well as for its adjustment in any direction when upon the platen, the casting off of the feed-roller leaving the paper free or loose upon the platen. In order, however, to prevent any backward movement of the platen during adjustments of the paper thereupon, a detent or dog 160 is employed. This device is preferably located upon the right-hand end of the shaft 148 and stands normally out of engagement with the ratchet-wheel 26 at the right-hand end of the platen.

When the handle or lever 158 is actuated and the feed-roller moved rearwardly from the paper, the point of the detent or dog is simultaneously vibrated up into engagement with the ratchet-wheel, as shown by the dotted lines at Fig. 5, thereby preventing said ratchet-wheel and the platen from turning backwardly during the shifting or adjustment of the paper. This platen-carrier locking or holding detent may be arranged at any desired locality to perform its locking function. If the ratchet-wheel were at the other end of the platen, the detent might be made a part of the finger piece or lever, or the lever might, if desired, be brought over to the right-hand side of the platen and be made a part of the detent thereat. The main part of this improvement consists in moving into engagement with the platen a detaining device simultaneously with the casting off or removal of the feed-roller for the purpose of preventing backward rotation of the platen.

Referring more particularly to Figs. 1, 12, and 13, centrally of the front bar 16 of the platen-carrier and firmly attached thereto on its under side by screws 161 is a small plate

162, which is forked or provided with two arms 163 at its left-hand side to receive the small grooved roll 21, which travels upon the shift-rod 22, hereinbefore referred to.

5 On the under side of the plate 162 is firmly secured by a screw 164 a yoke-block 165, which straddles the shift-rod and through which more particularly the platen-carrier is shifted for upper-case printing when the shift-
10 key is actuated and the shift-rod vibrated. The yoke-block is beveled or flaring at its lower end to enable it to more readily embrace the shift-rod in the turning-down movement of the platen after inspecting the work
15 on the under side thereof.

The front side of the yoke-block is grooved or recessed to receive the front scale-bar 166 at its upper edge, and said bar is secured in position thereupon additionally by a small
20 bent finger 167, attached to the yoke-block by a screw 168. The ends of the scale-bar are attached each to an arm 169, secured to the under side of the platen-carrier front bar and extending first horizontally outward and
25 then obliquely downward and outward, as shown more particularly at Fig. 4.

In connection with the scale is employed a pointer or index 170, which is formed on a forwardly-extending arm 171, secured by a
30 screw 172 to the under side of the shift-rod. This pointer is set exactly in the plane of the striking centers of the types, and hence indicates, in connection with the scale, the printing-point and the travel or progress of the carriage.
35

Referring to Figs. 19 and 20, a modification of the means for swinging or tilting the escapement-wheel, shaft, pinion, &c., will be found illustrated. In this construction the
40 shaft 61^a, having at one end a pinion 60^a and roll 64^a and at the opposite end an escapement-wheel 98^a, rotates in a support or bearing 95^a, which is pivoted by lateral arms 95^b upon a pin 96^a, fitted in lugs 96^b, rising from the top plate. Engaging with said pinion is
45 a feed-rack 55^a, and coöperating with said escapement-wheel are dogs similar to those hereinbefore described. The feed-rack may be supported by a pivoted frame, as in the
50 other views, and the feed-rack and pinion may be maintained in engagement by a hook or catch substantially like that shown in the other views; but in this modification of my invention the shaft, escapement-wheel, pinion,
55 and rack all move together about the axis 96^a instead of the rack and pinion moving downwardly and the escapement-wheel upwardly during the releasing action, as shown at Fig. 5, and for this reason the means for
60 lifting said devices must be varied somewhat from the means hereinbefore described with reference to the main views. For the purpose of swinging upwardly the escapement-wheel and rack and pinion, releasing means
65 substantially like those shown in the afore-said English patent may be employed; that is to say, releasing-levers of the first order

having an upward movement at their rear ends and acting upon the feed-rack or extensions thereof may be used for simultaneously
70 lifting or swinging upwardly the parts shown at Figs. 19 and 20 herein for the purpose of separating the escapement-wheel and dog. The parts will all return to their normal positions simultaneously by gravity, and the
75 downward swinging movement thereof may be limited by the adjustable stop 96^c, made, preferably, in the form of a screw; but, if desired, a spring may be added to supplement the action of gravity in returning the parts.
8

Various changes in detail construction and arrangement may be made without departing from the several features of my improvements, and it will of course be understood that in so far as the escapement-tripping
85 mechanism, broadly considered, is concerned any form of actuating or line-spacing mechanism may be employed in lieu of that shown.

What I claim as new, and desire to secure by Letters Patent, is—
9

1. In a type-writing machine, the combination of a carriage having a swinging feed-rack, a shaft having a pinion and an escapement-wheel and mounted in a pivotal support or bearing, so that the escapement-wheel may
95 be moved from engagement with the escapement-dog, substantially as set forth.

2. In a type-writing machine, the combination of a carriage having a swinging feed-rack, an escapement-dog, an escapement-wheel
100 therefor, a pinion for the rack, a rotatory shaft for said wheel and pinion having also a vibratory or swinging movement, and means upon the carriage or platen-carrier to separate the said escapement-wheel from its dog through the devices described.

3. In a type-writing machine, the combination of an escapement-wheel adapted to swing upwardly to be disengaged from its dog, a swinging rack and pinion connected to said
105 wheel, and a key for depressing the rack and pinion and lifting the escapement-wheel, substantially as set forth.

4. In a type-writing machine, the combination of a ratchet-wheel adapted to swing upwardly to disengage from its dog, a swinging rack and pinion, and a release-key connected to the rack and attached to the platen-carrier,
110 substantially as set forth.

5. In a type-writing machine, the combination with the escapement mechanism including the swinging escapement-wheel and rack and pinion, of a line-spacing mechanism for the platen connected to the escapement mechanism in a manner such that during the line-spacing operation and the simultaneous return of the platen for the beginning of a new line the escapement-wheel may be lifted from engagement with its dog, substantially as set forth.
115

6. In a type-writing machine, the combination of an escapement-dog, a pivoted spring-pressed bearing, a shaft adapted to rotate therein and also to swing with said bearing, an

escapement-wheel on one end of said shaft, a pinion on the opposite end, a swinging rack constantly in mesh with said pinion, and means for depressing said rack and through the pinion, shaft and bearing, effect the lifting of the ratchet-wheel, substantially as set forth.

7. In a type-writing machine, the combination with the dog, escapement-wheel, pinion, swinging shaft, and swinging rack, of a hook or catch adapted to maintain said rack and pinion in constant engagement, substantially as set forth.

8. In a type-writing machine, the combination with the dog, the swinging shaft, the escapement-wheel and the pinion on said shaft, of the swinging rack, and means for holding said rack and pinion in engagement, substantially as described.

9. In a type-writing machine, the combination with the dog, swinging shaft, escapement-wheel, pinion, swinging rack and bar attached thereto or forming a part thereof, of a spring-actuated pivoted hook engaging said bar, substantially as set forth.

10. In a type-writing machine, the combination of the dog, the swinging shaft having at one end an escapement-wheel and at the other end a pinion and a roller, a swinging rack to engage with said pinion and carrying a rib to bear on said roller, and a hook or catch, substantially as described.

11. In a type-writing machine, the combination of the dog, the swinging bearing or support, the shaft therein, the escapement-wheel on one end of said shaft, a pinion on the opposite end thereof, a swinging feed-rack having a ledge or flange, and a hook or catch engaging the same mounted at the inner end of the shaft bearing or support and adapted to swing therewith, substantially as described.

12. In a type-writing machine, the combination of the dog, the horizontally-pivoted bearing or support, the shaft therein having at one end the escapement-wheel and at the opposite end the pinion and roll, the swinging feed-rack having a rib and a ledge or flange, and a spring-actuated hook or catch pivoted at the inner end of said bearing or support and normally engaging with said ledge or flange, substantially as described.

13. In a type-writing machine, the combination of a dog, a vibratory shaft provided with an escapement-wheel for said dog and also with a pinion, a paper-carriage having a swinging rack, to mesh constantly with said pinion, a platen, a line-spacing mechanism therefor, and by which, through the swinging rack, pinion and vibratory shaft, the escapement-wheel is disengaged from its dog, and a trip mechanism for automatically releasing the escapement-wheel, shaft, and pinion, and rack during the return movement of the carriage and before the latter is fully arrested; substantially as described.

14. In a type-writing machine, the combination of an escapement mechanism compris-

ing the swinging escapement-wheel and rack and pinion, an arm connected to said rack and adapted to contact with a stop on the framework to arrest the movement of the rack toward the right during the termination of the movement of the carriage in the same direction, a line-spacing mechanism adapted to rotate the platen, and a device connected to said line-spacing mechanism and to the feed-rack adapted to depress the latter and to release it when its motion toward the right is arrested by the said stop, whereby the rack, pinion and escapement-wheel may return to their normal positions in advance of the arrest of the carriage, substantially as set forth.

15. In a type-writing machine, the combination of an escapement mechanism comprising a swinging escapement-wheel, pinion and feed-rack, an arm connected to said feed-rack and adapted to contact with a stop, a yielding device on said feed-rack, a lever or rock-shaft on the carriage adapted to act upon said yielding device, and a platen line-spacing mechanism adapted to act upon said lever or rock-shaft, the whole operating in substantially the manner set forth.

16. In a type-writing machine, the combination of an escapement mechanism comprising a swinging ratchet-wheel, pinion and rack, the rack being attached to a frame hinged upon the carriage, which latter has a sliding movement toward the right independently of said pivoted rack-frame, an arm projecting rearwardly from said frame adapted to contact with a relatively-fixed stop, and a platen line-spacing mechanism connected to said feed-rack to operate in substantially the manner described.

17. In a type-writing machine, the combination of an escapement mechanism comprising a swinging escapement-wheel, pinion and feed-rack, an arm connected to said feed-rack and adapted to contact with a relatively-fixed stop, a spring-pressed pin on said feed-rack, a lever or rock-shaft on the carriage adapted to act upon said pin, and a platen line-spacing mechanism adapted to act upon said lever or rock-shaft, the whole operating in substantially the manner set forth.

18. In a type-writing machine, the combination of an escapement mechanism comprising an escapement-wheel, pinion and rack, the rack being attached to a frame or support hinged upon the carriage and in a manner to enable the carriage to move longitudinally independently of said rack and frame, and a stop for arresting said rack in advance of the carriage, substantially as described.

19. In a type-writing machine, the combination of an escapement mechanism comprising an escapement-wheel, pinion and swinging rack, the rack frame or support being hinged upon the carriage and having a relatively independent longitudinal movement, a spring tending normally to force said frame and rack toward the right against a

stop on the carriage, and means for arresting the feed-rack in advance of the carriage, substantially as described.

20. In a type-writing machine, the combination of the escapement mechanism substantially as described, the swinging feed-rack forming a part thereof and connected to the line-spacing mechanism of the platen, the rack-bar frame or support hinged upon the carriage and movable independently endwise thereof, a spring for said feed-rack or support, the lugs or abutments therefor upon the carriage, and the rearwardly-extending contact-arm adapted to engage a relatively-fixed stop upon the framework, substantially as described.

21. In a type-writing machine, the combination of the dog, the swinging escapement-wheel and pinion, the swinging feed-rack supported upon the carriage, a hinge-rod 68 therefor mounted in the lugs 69, the spring 71, the arm 76 having contact 77, the head or contact 88, the spring-pressed pin 53, a rock-shaft or lever 47, and a line-spacing mechanism, substantially as described.

22. In a type-writing machine, and in an escapement-tripping mechanism, substantially as described, the combination of the spring-pressed rack-bar frame movable longitudinally independently of the carriage and having the contact 77, and the adjustable relatively-fixed stop 88.

23. In a type-writing machine, and in an escapement-tripping mechanism, substantially as described, the combination of the spring-pressed pin 53, the rock-shaft 47 detachably connected therewith, and a line-spacing mechanism.

24. In a type-writing machine, and in an escapement-releasing and automatic tripping mechanism, a yielding device arranged between the releasing mechanism and the escapement mechanism to enable the parts to assume their proper relationship after the tripping action and without binding or jamming under the force of the carriage-driving spring, substantially as described.

25. In a type-writing machine, the combination with the dog, swinging escapement-wheel, pinion and feed-rack, of line-spacing mechanism, and an intermediate rock-shaft adapted to depress said feed-rack and raise said escapement-wheel when the line-spacing movement is effected.

26. In a type-writing machine, the combination of the carriage having the arm 94, the hinged feed-rack frame on the carriage having the arm 76, and a contact or head on the framework, the frame-arm 76 being adapted to strike said contact and trip the rack, and the carriage-arm 94 being adapted to strike the arm 76 after the rack has been tripped and thereby arrest the return movement of the carriage, substantially as described.

27. In a type-writing machine, the combination of a carriage, an escapement mechanism, the feed-rack portion of which is carried

by said carriage and has an independent tripping action, the arm 76 extending rearwardly from the feed-rack support or frame and adapted to contact with a relatively-fixed stop to effect said tripping action, and an arm 94 on the carriage adapted to contact with the arm 76 after said tripping action and for the purpose of arresting the carriage, substantially as described.

28. In a type-writing machine, and in combination with the carriage and its escapement mechanism, the adjustable block 79, the contact-head 88 arranged in an opening therein, and the adjusting-screw and set-screw therefor, substantially as described.

29. In a type-writing machine, the combination of a paper-carriage, a marginal stop contrivance consisting of a bifurcated block adapted to slide upon two parallel rods, the lower one of which is provided with a series of notches, and a spring-pressed stem passing through said block and having a beveled catch at its lower end to engage with said notches, substantially as set forth.

30. In a type-writing machine, the combination of a paper-carriage, a marginal stop consisting of a block adapted to slide upon two parallel rods, the lower one of which is provided with a series of notches, a spring-pressed stem passing through said block and having a catch at its lower end adapted to engage with said notches, and an adjustable stop 88 adapted to be engaged by an arm or contact-piece of a carriage-escapement mechanism, substantially as set forth.

31. In a type-writing machine, the combination of a power-driven paper-carriage, an escapement-wheel, a holding dog, and a feeding-dog having a central normal position and adapted to be moved to either side thereof, substantially as described.

32. In a type-writing machine, the combination of a power-driven paper-carriage, an escapement-wheel, a holding-dog, and a pivoted feeding-dog having two faces as 121 and 122 and a spring adapted to bear thereupon to hold said dog in a central normal position, substantially in the manner described.

33. In a type-writing machine, the combination of a power-driven paper-carriage, a rocker or dog-holder, a dog pivoted upon said holder and adapted to occupy either of three positions, means for holding said dog in the central or intermediate position, and an escapement-wheel cooperating with said dog, substantially as described.

34. In a type-writing machine, the combination of a power-driven paper-carriage, a lifting escapement-wheel, a holding-dog, and a feeding-dog having a normal central position and adapted to be moved to either side thereof by the escapement-wheel, substantially as described.

35. In a type-writing machine and in the escapement mechanism, the combination with an escapement-wheel, and a holding-dog, of a pivoted feeding-dog capable of occupying

three different positions, and a spring-stop mechanism tending to keep said dog in the central or intermediate position.

36. In a type-writing machine and in the
5 escapement mechanism, the combination with an escapement-wheel, and a holding-dog, of a pivoted feeding-dog, and a hook-shaped spring bearing upon said dog at two points, one above and the other below the plane of
10 its pivot, substantially as described.

37. In a type-writing machine, the combination with a platen-carrier having a rearward-swinging movement on arms or links for upper-case printing and adapted to be
15 turned up for inspection of the work, of a latch mechanism, substantially as described, for preventing the platen-carrier from shifting upon its arms or links during the turning-up movement consisting of the sliding
20 plate 129 having the depending lug 133 and pivoted to the back rod 17 of the platen-carrier, a shoulder 134 adapted to engage the lug 133, and the lifter 135 on said rod 17.

38. In a type-writing machine, the combination with a platen-carrier having a rearward-swinging movement on arms or links for upper-case printing and adapted to be
25 turned up for inspection of the work, of a sliding gravity latch-plate hinged upon the back rod of the platen-carrier and adapted to
30 fall and engage a shoulder on the main carriage when the platen-carrier is turned up, and a device upon and turning with said back rod adapted to lift said latch during the turning-down movement of said platen-carrier.
35

39. In a type-writing machine, the combination with a swinging platen-carrier constructed substantially as described, of a sliding and guided plate hinged upon the back
40 rod of said carrier, a lug at the rear end of said plate adapted to engage with a shoulder on the main carriage when said platen-carrier is turned up, and a device on and turning with the said back rod adapted to lift said
45 plate when the platen-carrier is turned down.

40. In a type-writing machine, the combination

of a platen-carrier, a platen rotatably mounted therein and provided with a ratchet-wheel, a feed-roller mounted on swinging
50 arms or links, a lever or handle for moving said feed-roller out of contact with the platen or the paper thereon, and a normally free detent which moves into engagement with said ratchet-wheel when said roller is moved away
55 from the platen for the purpose of holding said platen against backward rotation, substantially as set forth.

41. In a type-writing machine, the combination of a platen-carrier, a platen rotatably
60 mounted therein and provided with a ratchet-wheel, a feed-roller mounted upon pivoted arms or links, and a rock-shaft having at one end a lever or handle and at the other end a detent, the whole operating in substantially
65 the manner set forth.

42. In a type-writing machine, the combination with the platen-carrier, and the shift-
70 rail, of the plate 162 attached to the platen-carrier front bar, the roller journaled in arms 163 on said plate, the yoke-block attached to the under side of said plate, and a scale-bar
75 attached to the face of said yoke-block, substantially as set forth.

43. In a type-writing machine, the combination with the platen-carrier, and the shift-
75 rail, of the plate 162 attached to the platen-carrier front bar, the roller journaled in arms 163 on said plate, the yoke-block attached to the under side of said plate, the scale-bar
80 attached to the face of said yoke-block, and the forwardly-extending arm 171 attached to the shift-rail and provided with an index arranged contiguous to the scale and in the plane of the
85 printing-point, substantially as described.

Signed at New York, in the county of New
York and State of New York, this 24th day
of December, A. D. 1894.

GEO. B. WEBB.

Witnesses:

JACOB FELBEL,
PHILLIPS ABBOTT.