(No Model.)

6 Sheets—Sheet 1.

T. OLIVER.

TYPE WRITING MACHINE.

No. 542,275.

Patented July 9, 1895.

FIG. 1.

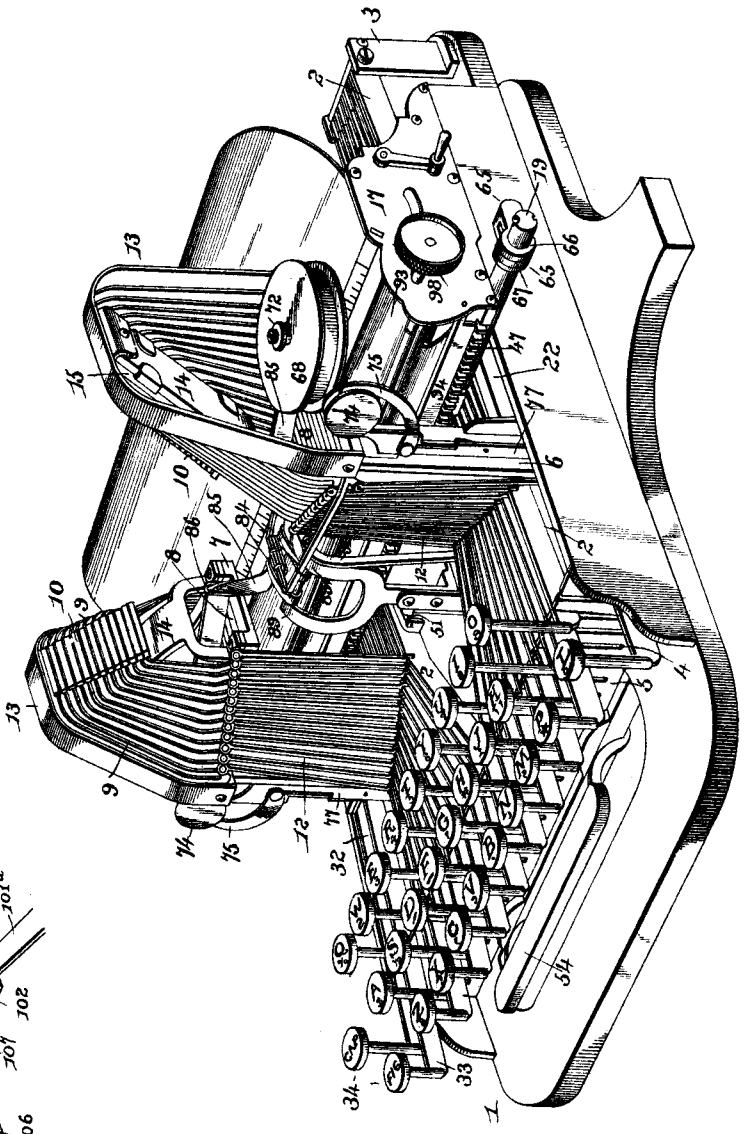
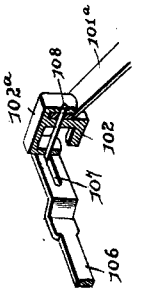


FIG. 19.



Witnesses

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C. A. Snow & Co.

(No Model.)

6 Sheets—Sheet 2.

T. OLIVER.

TYPE WRITING MACHINE.

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FIG. 7.

FIG. 2.

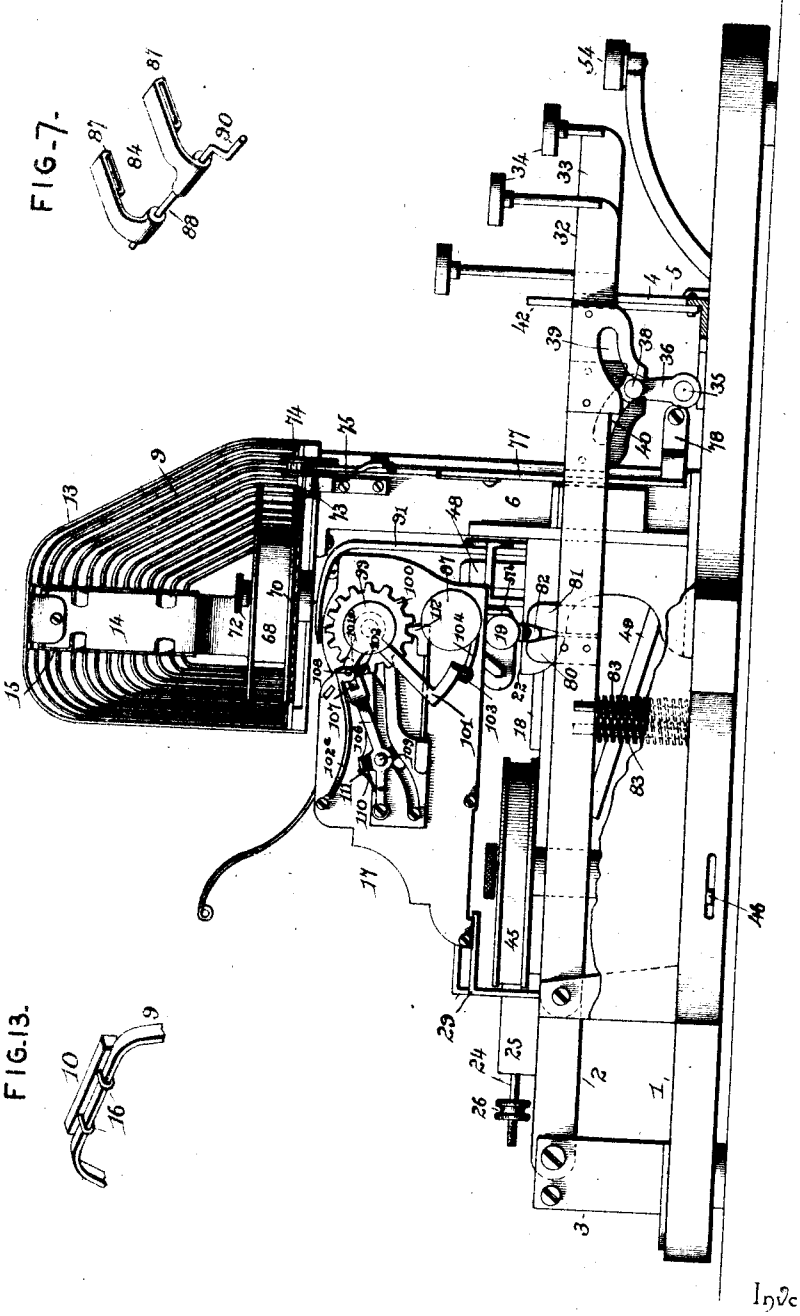

FIG. 13.

Witnesses

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(No Model.)

6 Sheets—Sheet 3.

T. OLIVER.

TYPE WRITING MACHINE.

No. 542,276. Patented July 9, 1895.

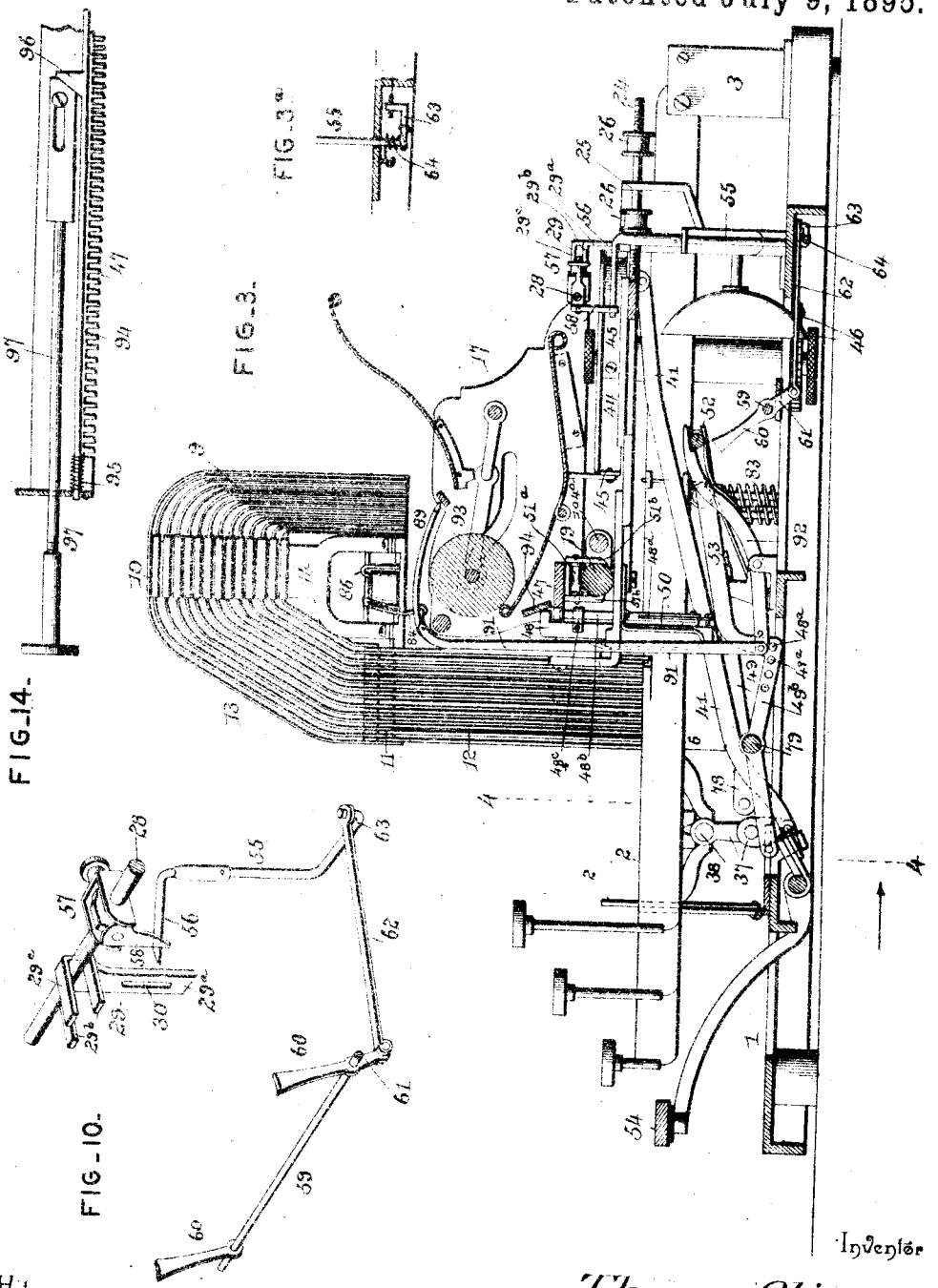

FIG. 14.

FIG. 3.

FIG. 3ª

FIG. 10.

Witnesses

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6 Sheets—Sheet 4.

T. OLIVER.

TYPE WRITING MACHINE.

No. 542,275. Patented July 9, 1895.

FIG-8.

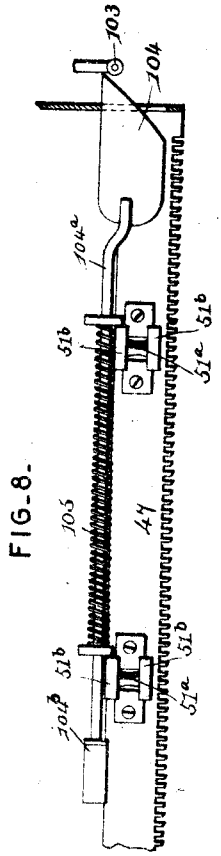


FIG-4.

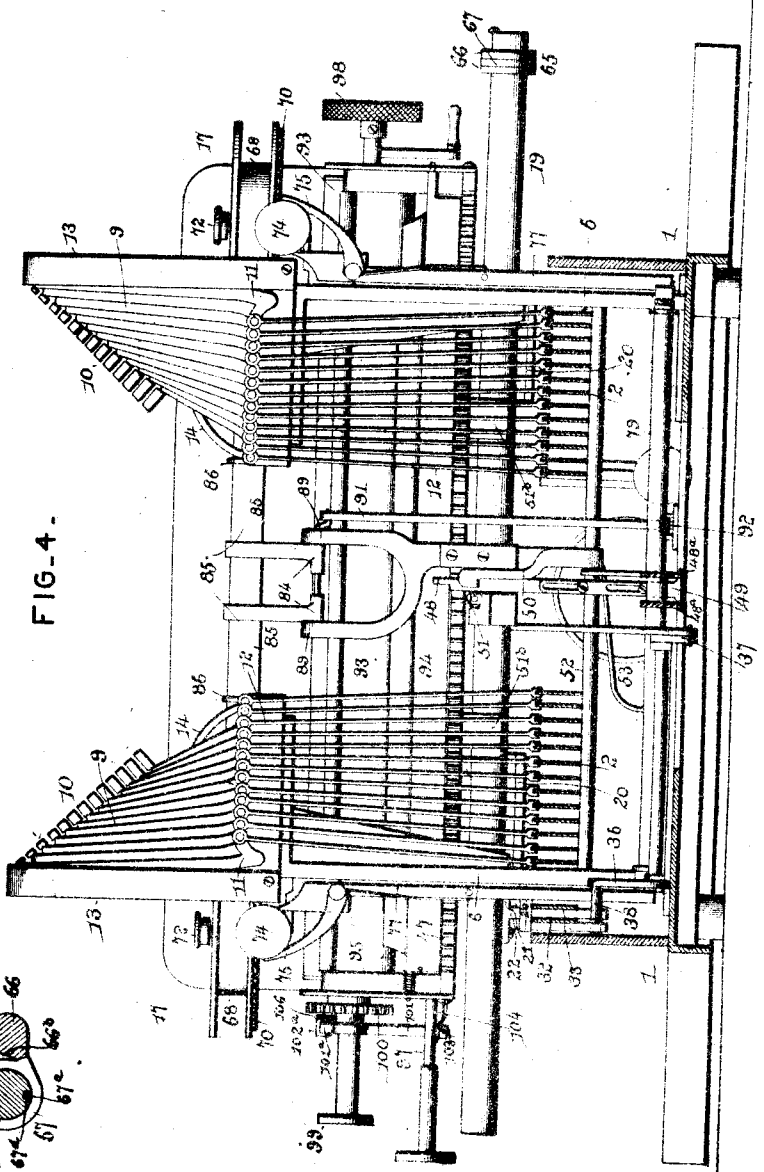
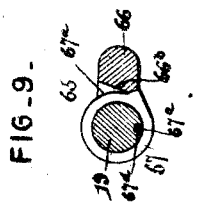


FIG-9.



Witnesses

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6 Sheets—Sheet 5.

T. OLIVER.

TYPE WRITING MACHINE.

No. 542,275. Patented July 9, 1895.

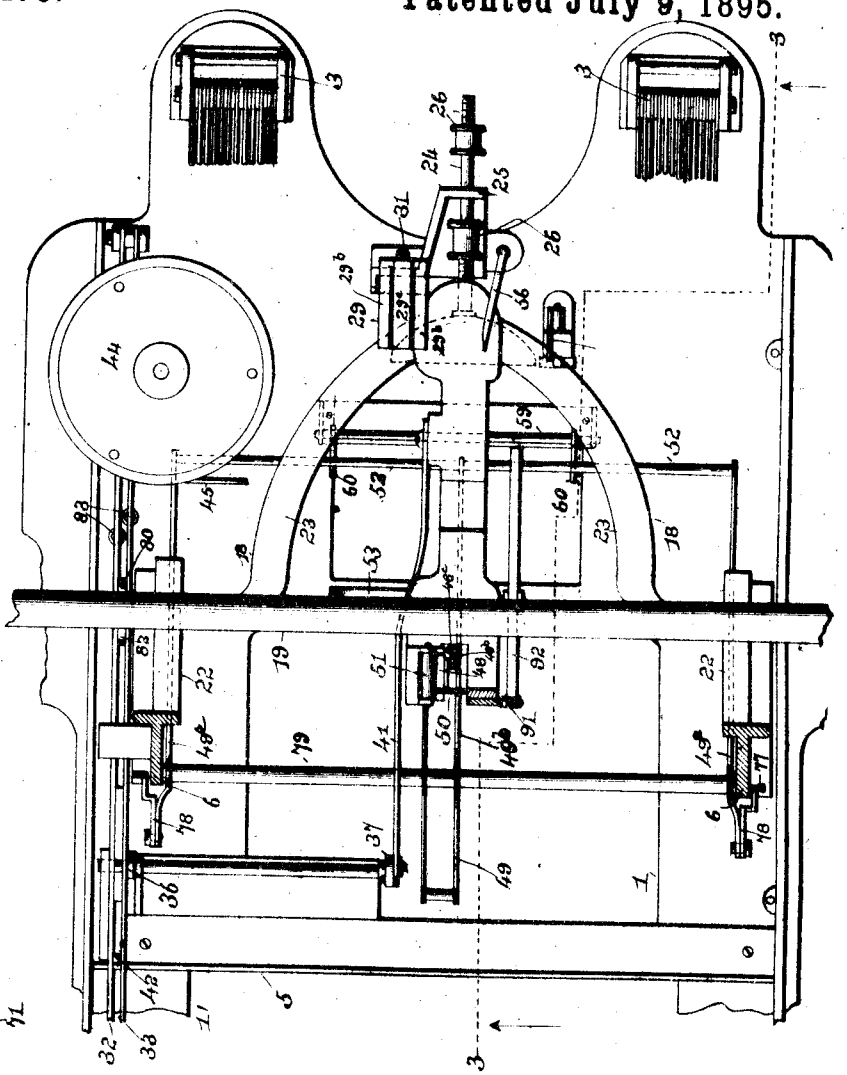

FIG. 5.

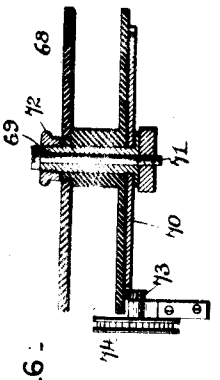

FIG. 6.

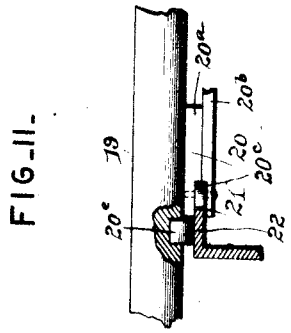

FIG. 11.

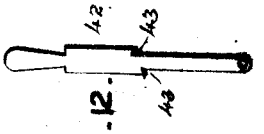

FIG. 12.

Witnesses

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(No Model.)

6 Sheets—Sheet 6.

T. OLIVER.

TYPE WRITING MACHINE.

No. 542,275.

Patented July 9, 1895.

FIG.15.

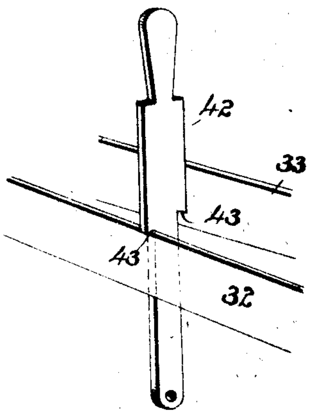


FIG.16.

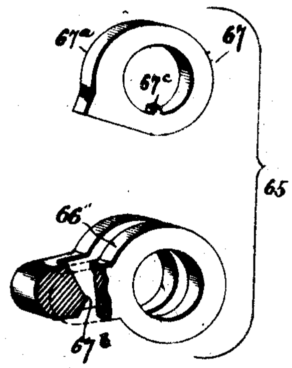


FIG.17.

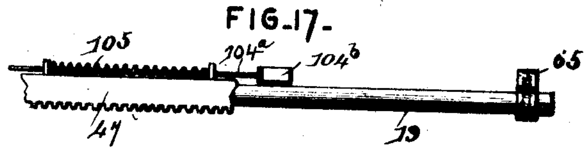
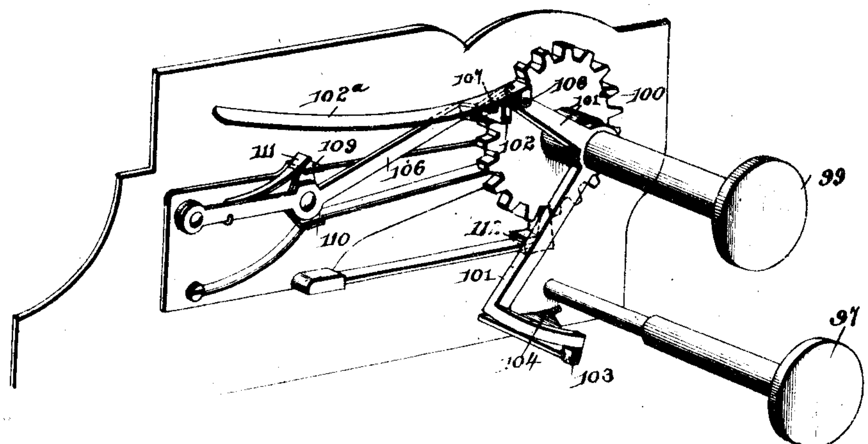


FIG.18.



Witnesses.

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By his Attorneys,

C. A. Snow & Co.

UNITED STATES PATENT OFFICE.

THOMAS OLIVER, OF EPWORTH, IOWA.

TYPE-WRITING MACHINE.

SPECIFICATION forming part of Letters Patent No. 542,275, dated July 9, 1895.

Application filed September 19, 1893. Serial No. 485,823. (No model.)

To all whom it may concern:

Be it known that I, THOMAS OLIVER, a citizen of the United States, residing at Epworth, in the county of Dubuque and State of Iowa, have invented a new and useful Type-Writing Machine, of which the following is a specification.

My invention relates to type-writing machines of the class in which type-bars are employed, and refers particularly to that style of machine in which the impression is produced upon the upper side of the platen in view of the operator; and the primary objects in view are to provide an automatically-operated holder or carrier for the ribbon, whereby it is brought to the operative position as a key is depressed, and is normally held out of the path of the type-heads; to provide improved mechanism for shifting the carriage forward and rearward from an intermediate point of rest to permit of the arrangement of the platen to receive the impression of either of three type carried by a type-head; to provide improved means for automatically rotating or feeding the platen to receive a new line, and adjusting devices for varying the space between the lines; to provide an improved marginal stop and means for locking the same in its set positions; to provide an improved key-locking device whereby the keys are locked against further movement when the carriage reaches a certain point, and means for releasing the same by the use of a shifting-key to enable the operator to add a dash or hyphen, and to provide an improved releasing-bar for disengaging the dog of the carriage-feeding mechanism from the rack to permit the carriage to be returned to its initial or starting position.

Further objects and advantages of this invention will appear in the following description, and the novel features thereof will be particularly pointed out in the appended claims.

In the drawings, Figure 1 is a perspective view of a type-writing machine embodying my invention. Fig. 2 is a side view partly broken away. Fig. 3 is a central longitudinal section. Fig. 3ª is a detail view in perspective of the actuating device for the key-locking mechanism. Fig. 4 is a transverse section on the line 4 4 of Fig. 3. Fig. 5 is a plan with the carriage and the front portions of the key-levers removed. Fig. 6 is a detail sectional view of one of the ribbon-spools. Fig. 7 is a detail perspective view of the ribbon holder or carrier. Fig. 8 is a detail reverse plan view of the slide and connected parts for actuating the rotary-feed mechanism for the platen. Fig. 9 is a detail view of the marginal stop. Fig. 10 is a detail view in perspective of the key-locking device. Fig. 11 is a detail view of the means for supporting the guide-bar, the same being a section taken parallel with and in the plane of the carriage guide-bar, to show the means for mounting said bar for forward and rearward movement upon the framework. Fig. 12 is a detail view of the lock for the shifting-levers. Fig. 13 is a similar view showing the rear side of a type-head. Fig. 14 is a detail plan view of the releasing-bar and connections. Fig. 15 is a view of the locking device, shown in connection with the shifting-levers. Fig. 16 is a detail view of the marginal stop with the parts detached. Fig. 17 is a detail plan view showing the relation of the marginal stop and cam-slide for operating the line-spacing mechanism. Fig. 18 is a detail perspective view of the line-spacing mechanism. Fig. 19 is a detail view to show the connection between the feeding-lever for the platen and the gage-arm by which the movement of said lever is regulated.

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

1 designates the base and 2 the key-levers, which are pivoted at their rear ends to the standards 3, carried by the base, and operate at their front ends in vertical guide-slots 4 in the transverse bar 5. Uprights 6 are disposed near the sides of the base and carry horizontal supporting-frames 7, upon which are arranged the horizontal parallel type-bar spindles 8. The U-shaped or looped type-bars 9, provided with the type-heads 10, are carried by said spindles and have crank-arms 11, which are connected by the links 12 to intermediate points of the key-levers. Upright yokes 13 are arranged at the outer ends of the supporting-frames, and rests 14 are disposed in inclined positions between the arms of said yokes, with their lower extremities secured to the inner ends of the supporting-

frames and their upper outer ends fixed to the looped portions of the yokes, said rests being provided with impact-cushions 15, against which the rear sides of the type-heads bear when not in use. The type-heads are adapted to carry a plurality of type-faces, preferably three, whereby an upper and a lower case letter, together with a sign or character or figure, may be arranged upon each type-head.

To prevent injury of the type-faces by interference between type-bars in operation, the type-heads are provided on their rear sides with projections 16 of greater length than the depth of the type-faces, whereby the extremities thereof come in contact with the front surfaces of the type-heads between the type-faces and prevent contact of the type-faces with a previously-depressed type-head.

The carriage 17 is slidably mounted at its front side upon a shifting frame 18, said frame comprising a bar 19, which is arranged parallel with the line of writing, and a yoke 23. The bar 19 is supported by horizontal guides 22, arranged at right angles to the line of writing, one of said guides being shown in section in the detail view, Fig. 11, and the relative positions of the guide-bar and guides 22 being shown in Figs. 4 and 5. The guides 22 are provided with horizontal inwardly-projecting flanges 21, and the guide-bar 19 is provided with antifriction-rolls 20^c, which travel upon the upper surface of said flange. In order to prevent movement of the guide-bar in a direction parallel with its length, and hence parallel with the line of writing, and guide the said bar in its movement transverse to the line of writing, and hence parallel with the length of the guides 22, I secure clips 20 to the under side of the bar, said clips each comprising a block 20^a and a plate 20^b, said plate being extended under and engaging the lower surface of the flange 21. In order to reduce the friction in shifting the guide-bar in a direction transverse to the line of writing, I employ horizontal antifriction-rolls 20^c, held in place by pivot-pins 20^d, and arranged to bear against the inner edges of the flange 21. This construction is clearly shown in Fig. 11. The front ends of the arms of the yoke 23 are secured to the said guide-bar 19, and the rear end of the yoke is provided with an extension or stem 24, which fits in a guide 25, located at the rear end of the base. Stop-nuts 26 are threaded upon this extension or stem to limit the forward and rearward movements of the shifting frame.

The carriage is moved transversely of the machine in printing and slides at its front side on the guide-bar 19, the carriage being provided at its rear side with a rod 28, which is arranged parallel with the line of writing and which slides in a fixed holder 29, which allows free longitudinal movement of said rod. This holder is also constructed to allow of transverse movement of the guide-rod, and for this purpose consists of a stem 29^a, twin lower horizontal fingers 29^b, and a single upper horizontal finger 29^c, the upper finger being spaced from the lower fingers a distance equal to the thickness of the rod 28. The stem 29^a of this holder is slotted longitudinally, as shown at 30, and is secured at the desired vertical adjustment by means of a set-screw 31, which engages said slot, whereby the holder may be adjusted vertically to regulate the elevation of the rear side of the carriage.

32 and 33 represent shifting-levers, having their keys 34 arranged in the keyboard, and 35 represents a rock-shaft provided with terminal crank-arms 36 and 37, the former of which is provided with a pin 38, which extends transversely beneath the shifting-levers in alignment with curved or cam slots 39 and 40, which are formed in said levers, respectively. The slot 39, which is formed in the lever 32, which I will designate as the "capital-shifting lever," is curved toward the front to throw the free end of the crank-arm 36 in that direction; and the slot 40, which is formed in the lever 33, which I will term the "figure-shifting lever," is curved toward the rear. The crank-arm 37 at the opposite end of the rock-shaft is connected by the link 41 to the shifting frame 18. It will be understood that the described arrangement of the cam-slots, rock-shaft, and crank-arms may be varied, provided the relative arrangement is preserved, the object being to throw the carriage in one direction by the use of one shifting-lever and in the opposite direction by the use of the other shifting-lever. A lock 42 (shown in Figs. 12 and 15) is arranged between the shifting-levers near their front ends, and is pivoted to a fixed portion of the base, said lock being provided upon opposite sides with shoulders 43, to engage the shifting-levers when it is desired to use the upper case or the figures successively or for a number of characters. 44 represents the carriage-spring, which is connected thereto by means of the strap 45 and is controlled by a tension device 46.

The carriage is provided with a rack-bar 47, engaged by a dog 48, which is pivotally connected at its lower end to a rocking lever 49, and is normally held in operative relation with the rack-bar by means of an actuating-spring 50. Said dog operates in contact with an antifriction-roll 51, which prevents lateral straining of its pivotal connection with the lever 49. Said rocking lever comprises a transverse spindle 79, a central forwardly and rearwardly extending arm 49^b, and side arms 49^c, and the central and side arms of said lever are extended rearwardly beyond the pivotal connection of the dog and carry the space-bar 52, which extends transversely beneath the key-levers, to be actuated thereby. The rocking lever is actuated by means of a spring 53, whereby the space-bar is normally held in contact with the lower edges of the key-levers. The space-key 54, which is arranged in the

usual position at the front of the keyboard, is operatively connected to the front end of the central arm of the rocking lever, whereby, when the space-key is depressed, the front end of the rocking lever is elevated and the space-bar is depressed. The pintles 48^a of the dog 48 engage perforations 49^a in the central arm of the lever 49, and a series of said perforations is provided to allow adjustment of the dog toward or from the fulcrum of the lever to vary the throw of the dog. Pivotally mounted upon the dog 48 is an operating-pawl 48^b, extending at its upper end through a guide 48^c to limit its movement, and provided with an actuating-spring 48^d.

The carriage is provided near its front side with depending ears or clips 51^b to receive the guide-bar 19, whereby forward and rearward movement may be communicated from said bar to the carriage, and mounted in said clips and bearing upon the upper side of the guide-bar are the antifriction-rolls 51^a.

Arranged at the rear of the base is a key-locking device, comprising a vertical spindle 55, a trip-arm 56, connected to the upper end of said spindle and extending horizontally forward adjacent to the guide-rod at the rear of the carriage, and connections between said spindle and the space-bar, whereby, when the trip-arm is pressed laterally, said space-bar is locked in its normal or elevated position, thus locking the space-key and the key-levers. The means whereby this trip-arm is actuated preferably consist of a detent 57, adjustably mounted upon the guide-rod 28 of the carriage and provided with a pivotal tooth 58, which engages the trip-arm as the carriage moves to the left and slips idly thereover as the carriage moves to the right, the means whereby said tooth is caused to pass the trip-arm and occupy a position to the left thereof and the object of such movement being explained hereinafter. The mechanism by which the space-bar is locked when the trip-arm is actuated preferably consists of a rock-shaft 59, provided with stop-arms 60, and a crank-arm 61, also carried by the rock-shaft and connected by a link 62 to a corresponding crank-arm 63 at the lower end of the spindle 55. A spring 64 (see Fig. 3^a) is connected to the spindle to normally hold the stop-arms out of operative relation with the space-bar. The trip-arm is of such a length as to be engaged by the adjustable detent on the carriage when the latter is in either its upper or lower case position, but is not of sufficient length to be engaged by the detent when the carriage is thrown forward by the figure-shifting lever 32. Hence when the operation of the mechanism is checked by the actuation of the trip-arm and it is desired to apply a dash or hyphen in order to carry a word or syllable to the succeeding line, the operation of throwing the carriage forward by the figure shifting key to bring the platen in position to receive the impression of the dash or hyphen disengages the detent from the trip-arm, releases the key-levers, and allows a key to be operated. This arranges the tooth 58 on the left of the trip-arm, as above stated; but as the tooth is pivoted the subsequent movement of the carriage to the right causes the tooth to slip idly over the trip-arm.

The marginal stop 65 is arranged upon the guide-bar 19 of the shifting frame, and is provided with an eye 66, fitted upon the bar, and bifurcated or slotted to receive the eccentric ring or cam 67. This cam-ring is feathered upon the bar to prevent rotation with the eye of the stop, and the outer periphery thereof is eccentric with the guide-bar at the point 67^a, and hence when the free end of the stop is elevated to a vertical position, so that the shoulder 67^b at the end of the bifurcated portion thereof is out of engagement with the said eccentric portion 67^a of the ring, the stop may be moved freely along the guide-bar, and when the stop is turned to a horizontal position, as shown in Figs. 1 and 9, it is clamped firmly in position by the engagement of the offset or eccentric portion 67^a of the cam with the end 67^b of the bifurcation or slot. Said engagement causes the cam or eccentric portion of the ring 67 to press the part 66 outward and produce frictional pressure of the rings of said part 66 upon the surface of the bar 19 to obstruct the sliding of the stop upon the bar. To prevent rotation of the cam, it is provided with a feather or stud 67^c to fit in a groove 67^d, formed in the bar 19, thus providing for sliding movement of the stop upon the bar.

68 represents the ribbon-spools, which are loosely mounted upon sleeves 69, connected at their lower extremities to spur-wheels 70, said sleeves being rotatably mounted upon the pivot-screws 71, secured to the supporting-frames. Threaded upon these sleeves are thumb-nuts 72, which, when tightened, clamp the spools to the sleeves and hence to the spur-wheels. Meshing with said spur-wheels are pinions 73, the spindles of which carry ratchets 74, engaged by the oppositely-disposed pawls 75 and 76, the pawls 75 being arranged to engage and actuate the ratchets as they ascend, and the pawls 76 being arranged to engage and actuate the ratchets as they descend. These pawls are carried by vertical reciprocating arms 77, which are connected at their lower extremities to crank-arms 78, carried by the transverse spindle 79 of the rocking lever 49.

To maintain the carriage in the lower-case position against vibration during operation, I provide the shifting-levers with stops 80 and 81, respectively, which engage opposite sides of a depending portion 82 of the guide-bar 19 of the shifting-frame. The stop which is carried by the figure shifting-lever is arranged in front of the guide-bar 19, whereby it is removed or depressed out of the line of movement of the guide-bar when said key is operated, and the stop which is carried by the capital-shifting key is arranged in rear of the

guide-bar, whereby it is removed from the path of the latter when said lever is operated.

83 represents the actuating-springs for the shifting mechanism, which are located under the shifting-levers, to return the latter after depression to their normal positions, and hence return the carriage to its normal or lower-case position.

84 represents a pivotal holder or carrier for the ribbon 85, which is located between the ribbon-spools and between the fixed ribbon-guides 86 to normally hold the ribbon out of the path of the type-head and carry the same into the path of the type-head when a printing-key is depressed. This holder or carrier comprises spaced loops 87, provided with a spindle 88, which is mounted in bearings in the upright 89. One end of the spindle is provided with a crank-arm 90, which is connected by means of a link 91 to the front end of a tilting lever 92. The rear end of this lever is connected to the space-bar, whereby, when the latter is depressed by the actuation of a key-lever, the tilting lever is operated and the holder or carrier is thrown down to arrange the ribbon or the portion thereof which is between the loops 87 parallel with the surface of the platen, which is shown at 93. The type-heads strike between the loops 87.

The construction of the carriage proper and the means for moving and locking the platen in its operative position are described in Patent No. 450,107, granted to me on April 7, 1891, and hence a particular description thereof in this connection is deemed unnecessary.

Pivotally connected to the carriage above the rack-bar, with its lower-free edge contiguous to the latter, is a releasing-bar 94, provided adjacent to its pivoted upper edge with a coiled retraction-spring 95, to normally hold said free lower edge repressed or swung backward from the teeth of the rack-bar and adapted when swung forward to engage the upper end of the dog and release the latter by disengaging it from the teeth of the rack-bar. Fixed to the rear side of this releasing-bar at its free lower edge is a cam-lug 96, which is arranged in the path of a trip-rod 97, disposed longitudinally of the carriage and capable of longitudinal movement to actuate the releasing-bar. This trip-rod is returned to its normal position when released by means of the actuating-spring 95 of the releasing-bar. The coiled spring 95, as shown in Figs. 4 and 14, normally presses the lower edge of the releasing-bar backward; but when the trip-rod 97 is moved inward or toward the lug 96, the coacting beveled surfaces of the trip-rod and lug cause the releasing-bar to spring forward against the tension of the spring 95, and thus disengage the dog from the teeth of the rack-bar. When the trip-rod is released, the backward pressure of the spring 95, acting through the beveled surface of the lug 96 and the end of the trip-rod, returns said trip-rod to its normal or extended position.

The spindle of the platen 93 is provided at the right-hand end of the carriage with a hand-wheel 98 and at the left-hand end with a knob 99 to facilitate the return of the carriage to its initial or starting position when about to commence a line. This knob is arranged contiguous to the knob on the extremity of the trip-rod 97, whereby the carriage may be released from engagement with the dog and returned to its initial position by the left hand of the operator. Fixed to the spindle of the platen is a gear 100, and loosely mounted upon the spindle adjacent to said gear is a feeding-lever 101 of an angle or bell-crank shape, carrying at the extremity of one arm 101^a a loose gravity-pawl 102 to engage said gear, said pawl having an arm 102^a, by which the pawl may be moved by hand to turn the platen. The feeding-lever is provided at the free end of its other arm with an antifriction-roller 103, which is normally arranged in the path of a cam-slide 104, having a stem 104^a, mounted upon the carriage parallel with the line of writing, with its opposite or right hand end provided with an enlargement 104^b in position to engage the marginal stop 65 when the carriage reaches the limit of its movement to the right or reaches the initial or starting position, which may be determined by the adjustment of said marginal stop. When the extremity of the cam-slide engages the stationary stop, the former, which is normally held in its retracted position by a spring 105, is moved to the left, thereby engaging the antifriction-roller at the free end of the feeding-lever, and turning the platen to receive a new line.

The means for adjusting the spaces between lines consist of a pivotal gage-arm 106, bifurcated or slotted at its free end, as shown at 107, to receive a stud 108 on the side of the feeding-lever 101, a stud 109, which is arranged in a fixed position adjacent to an intermediate point of said gage-arm, and a rotatable cam 110, which is mounted upon the gage-arm in position to engage said stud 109. This gage-arm is provided with an actuating-spring 111 to raise the feeding-lever to its operative position after having been depressed by the engagement therewith of the cam-slide. It will be understood that the stud limits the upward movement of the gage-arm, and hence by the manipulation of the cam the amount of upward movement or the initial position of the gage-arm may be regulated to provide any desired extent of movement of the feeding-lever when engaged by the cam-slide. By this arrangement the operator is enabled not only to provide a full and a half space, as in the usual forms of type-writing machines, but spaces of any size desired, from a half to a whole space. The gear is held in set positions by the pawl 112.

The stud 108 for engagement with the slot 107 in the end of the gage-arm 106 may con-

sist, as shown in the drawings, of the pivot by which the pawl 102 is mounted upon the short arm 101^a of the feeding-lever 101.

When it is desired to turn the roll 93 to advance the paper by hand under certain conditions, it is convenient to depress the extension-arm or finger-hold 102^a, which is rigid with and forms a part of the pawl 102. When it is necessary to disengage the pawl 102 from the gear 100 in order to allow free forward or backward adjustment of the roll by means of the hand-wheel 98, the free end of said extension or arm 102^a may be elevated.

From the above description it will be understood that when the end of a line is reached the operator releases the feeding mechanism by pressing the trip-rod and pushes the carriage to the right, and when the latter reaches the limit of its movement to the right the platen is automatically fed the distance of a space, according to the adjustment of the line-spacing mechanism.

The ribbon-spools are caused to alternately reel and unreel the ribbon by alternately tightening and loosening the thumb-nuts. One of the thumb-nuts is tightened and the other is loosened, thereby causing the ribbon to feed toward and be reeled upon that spool which is fixed to its spur-wheel.

The means for shifting the carriage, operating the ribbon holder or carrier, and actuating the marginal stop, will be readily understood without further description, inasmuch as their co-operation has been set forth in connection with the description of the parts.

It will be understood, furthermore, that various changes in the form, proportion, and the minor details of construction may be resorted to without departing from the principle or sacrificing any of the advantages of this invention.

Having described my invention, what I claim is—

1. The combination with a carriage bearing a rotary platen, of a feeding lever, pawl-and-ratchet connections between the lever and the platen, means to actuate said lever when the carriage reaches its initial or starting position, and a gage-arm connected to the lever and carrying a cam which coacts with a fixed lug to regulate the throw of the lever.

2. The combination with a carriage bearing a rotary platen, of a feeding lever, pawl-and-ratchet connections between the lever and the platen, means to actuate said lever, a gage-arm operatively connected to the lever, and adjustable means for limiting the movement of said arm to regulate the throw of the lever.

3. The combination with a carriage bearing a rotary platen, of a feeding lever operatively connected to the platen, a gage-arm connected at one end to the feeding lever, and a cam carried by the gage-arm to co-operate with a fixed lug to gage the amount of rotation of the platen.

4. The combination with a slidable carriage, and operating connections, of a marginal stop slidably fitted upon a guide-bar in the path of a projection on the carriage and having a bifurcated eye-portion loosely and revolubly mounted upon the guide-bar and a cam-ring arranged between the separated portions of the eye and feathered upon the guide-bar said eye-portion having a shoulder to engage an eccentric portion of the cam-ring.

5. The combination with a shifting frame capable of movement in a direction at right angles to the line of writing, and a carriage mounted upon said frame and provided with suitable feeding mechanism, of shifting-levers provided with oppositely-disposed stops to engage a stationary part of the shifting frame, and connections between said levers and the shifting frame whereby the latter may be moved in opposite directions from an intermediate point of rest, at which point said stationary part of the frame is engaged by the stops.

6. The combination of a slidable shifting frame provided with an extension or stem fitting in a guide and having adjustable stops to limit the movements thereof, a carriage mounted upon said frame, shifting-levers, and operating connections between the levers and the shifting frame whereby the latter is moved in opposite directions from an intermediate point of rest.

7. The combination with a shifting frame, and a carriage mounted thereon, of a rock-shaft operatively connected to the shifting-frame and provided with a crank bearing a lateral pin, and independently-movable shifting levers provided respectively with oppositely-curved cam-slots adapted to engage said pin to rock said shaft in opposite directions from a point of rest.

8. The combination with a carriage provided with a rack-bar and an actuating spring, and a pivotal dog engaging said rack-bar, of a swinging releasing-bar pivoted adjacent to its upper edge and arranged with its free lower edge contiguous to the said dog and provided with a cam-lug, a spring for repressing the releasing-bar and normally holding the same out of engagement with the dog and a longitudinally slidable trip-rod having a beveled end arranged to engage said lug and move the releasing-bar toward the dog to disengage the latter from the rack-bar.

9. The combination with a carriage and feeding mechanism therefor, key-levers, and ribbon feeding devices operatively connected to the key-levers, of a pivotal ribbon-holder or guide having a cranked spindle and spaced arms having loops for the reception of a ribbon, and connections between the said cranked spindles and the key-levers, substantially as specified.

10. The combination with a carriage, feeding mechanism therefor, key-levers, and a space-bar actuated by said key-levers and operatively connected with the feeding mechanism, of a locking device comprising a transversely disposed shaft arranged parallel with

the space-bar and provided with arms to engage the same, a trip arm arranged in the path of a projection upon the carriage and carried by a rotatable spring actuated spindle, and connections between said spindle and the said shaft, substantially as specified.

11. The combination with a carriage mounted for movement transverse to the line of writing and capable of a plurality of positions, feeding mechanism therefor, key-levers, a space-bar actuated by the key-levers and operatively connected with the feeding mechanism, and shifting levers to move the carriage in a direction transverse to the line of writing of locking-arms arranged to engage the space-bar, a trip-arm operatively connected to the locking-arms, and a pivotal detent adjustably secured to the carriage to engage said trip-arm, and adapted to be disengaged therefrom by shifting the carriage.

12. The combination with a carriage capable of movement at right angles to the line of writing, feeding mechanism for the carriage, key-levers, and a space-bar actuated by said key-levers and operatively connected to the feeding mechanism, of locking-arms to engage said space-bar, a trip-arm connected to the locking arms a detent upon the carriage to engage said trip-arm, and means for moving the carriage in a direction at right angles to the line of writing to disengage the said detent from the trip-arm.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

THOMAS OLIVER.

Witnesses:
THOMAS ALDERSON,
CLIFTON B. TREWIN.