

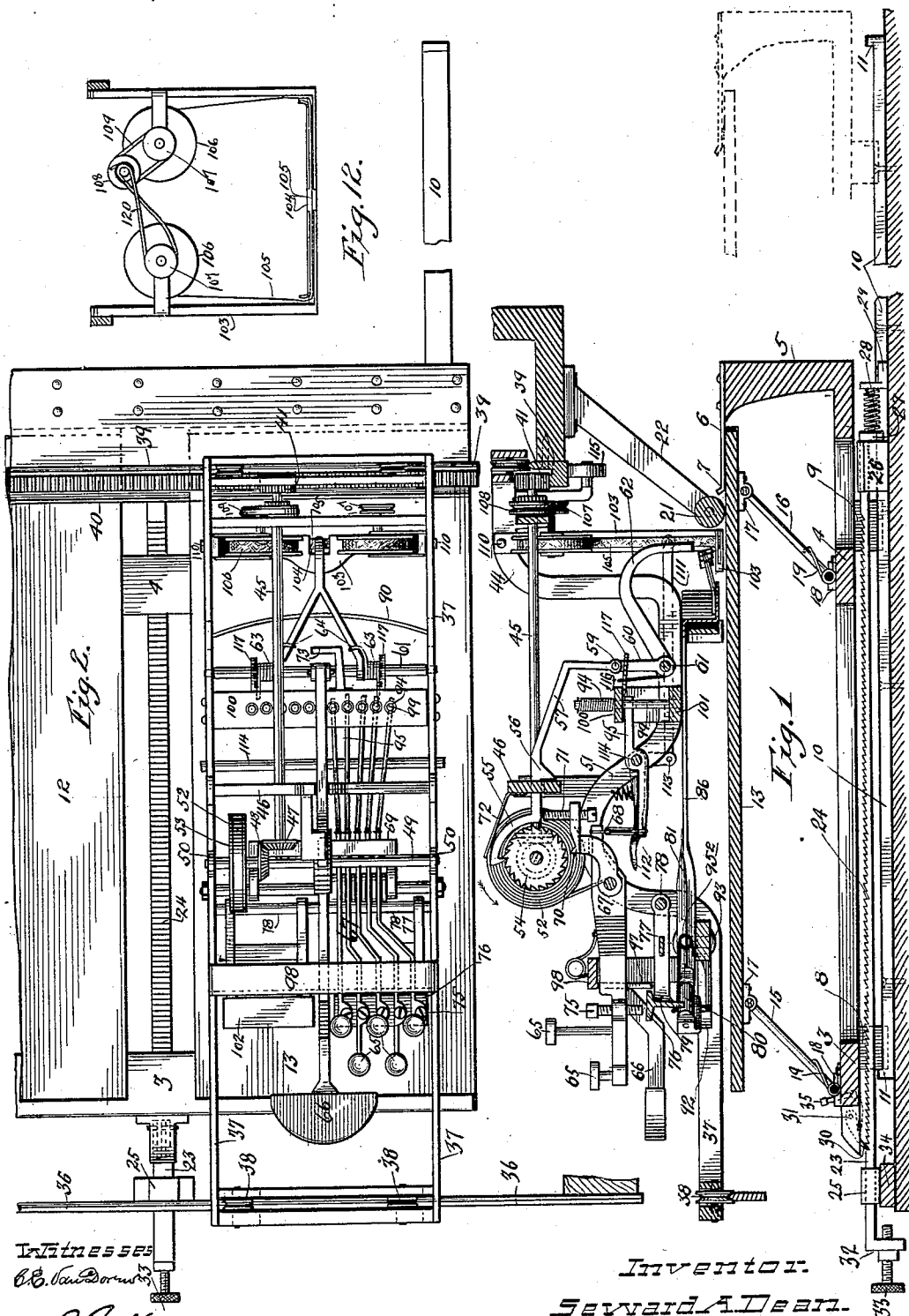
(No Model.)

3 Sheets—Sheet 1.

S. A. DEAN.
TYPE WRITING MACHINE.

No. 463,968.

Patented Nov. 24, 1891.



Witnesses
C. C. Vandorn

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By Paul & Merwin Attys

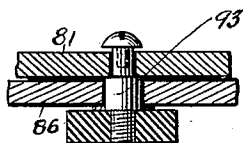
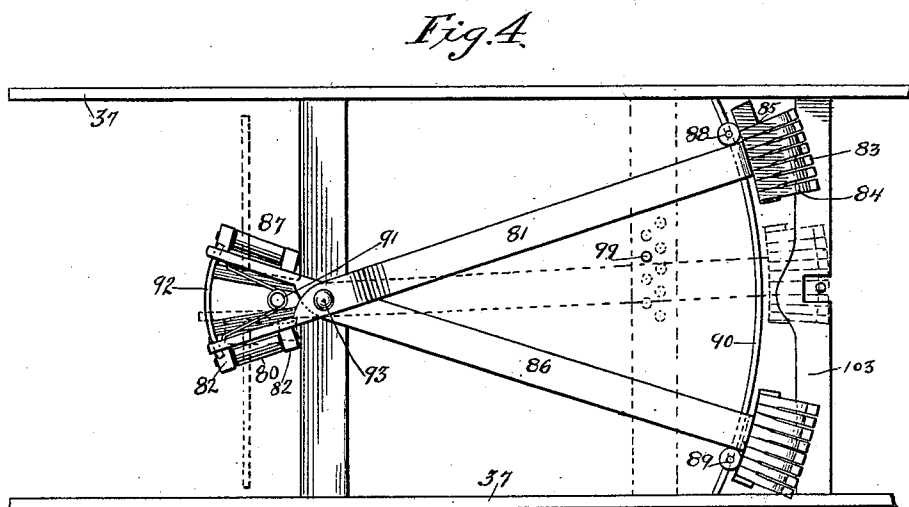
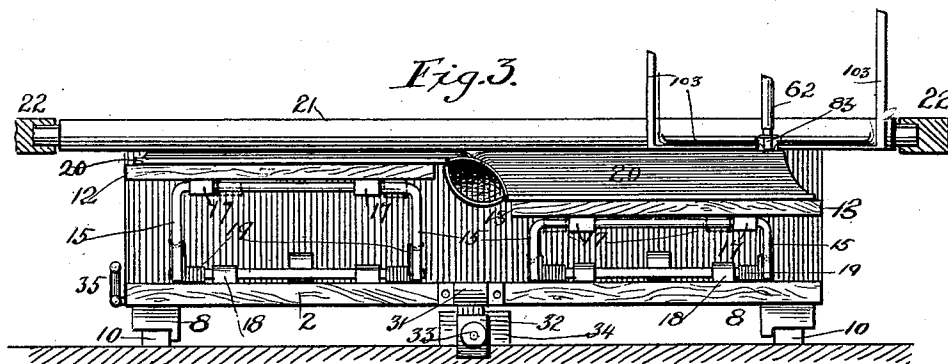
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3 Sheets—Sheet 2.

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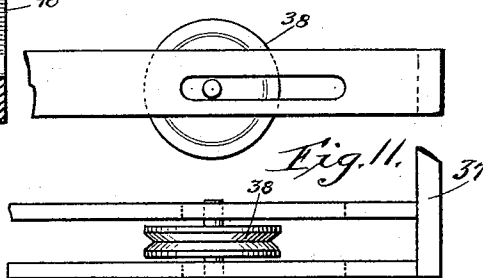
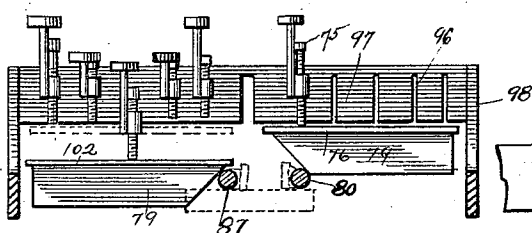
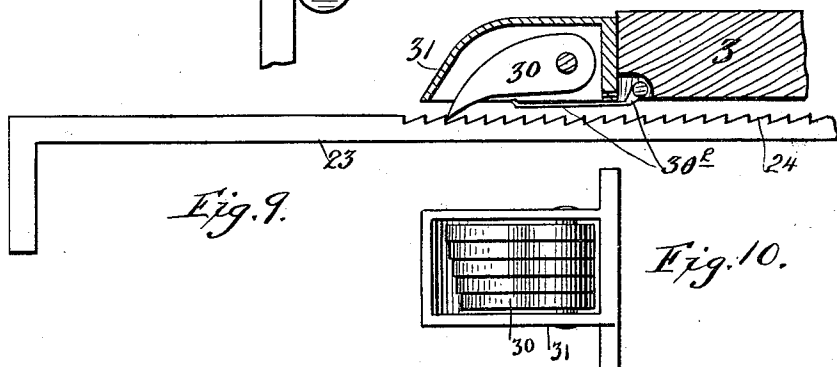
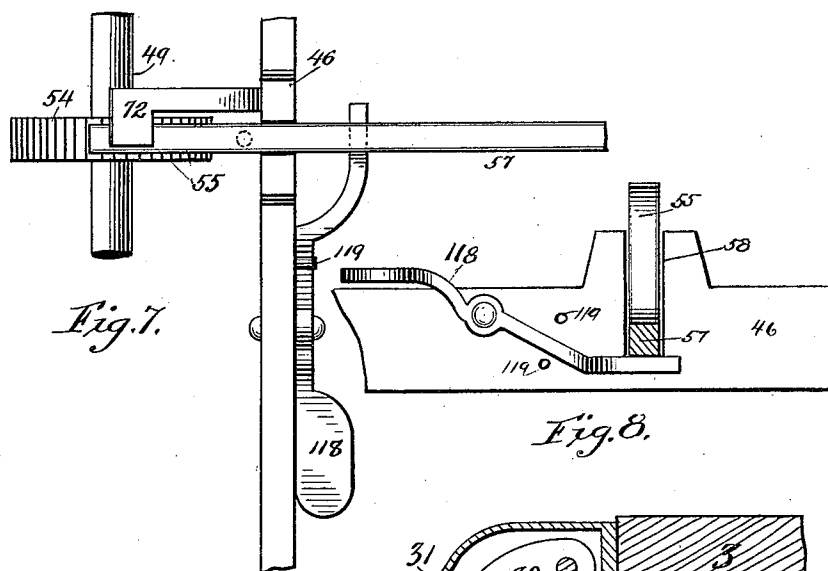
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UNITED STATES PATENT OFFICE.

SEWARD A. DEAN, OF BUFFALO, MINNESOTA.

TYPE-WRITING MACHINE.

SPECIFICATION forming part of Letters Patent No. 463,968, dated November 24, 1891.

Application filed September 5, 1890. Serial No. 364,025. (No model.)

To all whom it may concern:

Be it known that I, SEWARD A. DEAN, of Buffalo, in the county of Wright and State of Minnesota, have invented certain Improvements in Type-Writing Machines for Writing in Books, of which the following is a specification.

My invention relates to means designed particularly for making type-written entries in books, the object of the invention being to provide a type-writer mechanism by means of which deeds, assignments, or other instruments may be rapidly and easily written in large record-books—such, for example, as are employed for registering deeds or other instruments—although the invention is applicable also for writing in smaller books or upon detached sheets of paper or upon tablets.

My invention consists, first, in a novel support for the book which will receive and automatically bring the book into a firm flat position ready to receive the impression from the type-writer; second, in means for supporting the type-writer independently of the book-support, whereby it will be capable of writing upon the pages of the book or upon paper arranged beneath the type-writer upon the book or paper support, and at the same time will permit the type-writer to be readily and quickly moved away from over the surface of the book, so as to permit the leaves of the book to be turned or the matter written in the book to be read or any corrections or changes in the written matter to be made; third, in special means whereby the movable support or table and the type-writer may be given the proper movements to properly space and align the printing, and, fourth, in certain details of construction and combination hereinafter described, and particularly pointed out in the claims.

In the accompanying drawings, forming a part of this specification, Figure 1 is a sectional side elevation illustrating a type-writer and supporting-table embodying my invention. Fig. 2 is a plan view of the same. Fig. 3 is an end elevation of the movable supporting-table, showing a book in position thereon. Fig. 4 is a detail plan view of the swinging type-arms. Fig. 5 is a sectional detail showing the manner of pivotally securing said

arms one above the other in such manner as not to interfere with one another. Fig. 6 is a detail end elevation of the type-writer, showing the angle-pieces through the medium of which said type-arms are operated by the keys. Fig. 7 is a detail plan view showing means for disengaging the catch from the ratchet-wheel upon the spring-arbor when it is desired to move the carriage to the left or right across the page. Fig. 8 is an elevation of the same. Fig. 9 is a detail showing the rack-and-pawl device constituting the line-feed. Fig. 10 is a plan view from beneath of the several pawls of different lengths adapted to engage said rack. Fig. 11 shows two views of the roller-wheels upon which the type-writer carriage is adapted to move over suitable stationary tracks. Fig. 12 is a detail view showing the arrangement of the ink-ribbon rolls and means of reversing the same.

Like parts are indicated by the same numerals throughout the different figures of the drawings.

As shown in Figs. 1, 2, and 3 of the drawings, the movable support or table consists of the base-frame 2, having the cross-pieces 3 and 4, and the forward upright 5, extending clear across the base-frame 2, and provided with the plate 6, having the upturned end 7. This base 2 is provided with the strips 8 and 9, secured to the under surface thereof at the forward and rear ends of the same, and adapted to slide upon the track 10, extending forward from the rear end of the desk, and provided with the stops 11 at each end adapted to limit the travel of the book-support or table.

In the use to which I have adapted my table—that is, with books—it is necessary that the table should be made in two sections 12 and 13. These sections or plates 12 and 13 are independently supported by a set of spring-brackets 15 and 16, placed at the opposite ends of each plate, respectively, and pivotally connected to the same by means of the eyes or bearings 17 and 18. These brackets, with the plates, are normally held in position shown in Fig. 1 by the coiled springs 19 engaging with said brackets 15 and 16, as shown. I thus provide two plates, which may be pressed down toward the base independently of each

other, and which will at any height occupy planes parallel with the plane of the base. Thus, as shown, a book 20 may be placed upon the plates, one cover on each, and the book
 5 opened at any page and still be left flat upon the upper surface, for if one side be thicker than the other the plate beneath the same will sink down far enough to accommodate it beneath the roll 21, permanently secured in suitable bearings 22. The bearings 22 are in turn
 10 secured to the stationary frame of the desk upon which the book type-writer is to be used.

I have shown the plate 6 merely as a precaution provided against the loosening of the
 15 plates 12 and 13 when the table is removed from beneath the roll 21, as is sometimes done. So far, however, as confining the book to be written upon is concerned, the roll 21 is all that is necessary, as this will keep the upper
 20 surface of the book at all times level. Now as each line is written it becomes necessary to move the table forward the distance of one space, and in order to advance the table just this required distance of one space, I provide
 25 the rack-and-pawl device shown in Figs. 1, 9, and 10. The rack-rod 23 is provided with the teeth 24, extending as far forward as it is wished to move the table. The rod 23 is adapted to move in suitable guides 25 and 26
 30 placed at its rear and forward ends, respectively, and is provided with the foot 27, against which the coiled spring 28, extending from the angle-piece 29, is adapted to press the ratchet-bar back. The pawls 30 are pivoted
 35 within the shield 31, secured upon the cross-piece 3, and are adapted to engage a notch of the rack to prevent the table from being moved back. The forward end of this rack-bar 23 is also provided with an angle-piece
 40 32, through which is inserted the screw 33, adapted to serve as an adjustable stop. When it is desired to move the table forward the distance equal to the space between two lines, the rack-bar 23 is pushed in by pressing on the
 45 head of the screw 33 until the end of the screw comes in contact with the stop-block 34 fixed upon the table. As this is done the table bearing the book is pushed through under the roll 21. The rod 23 will then be released and
 50 will be immediately pushed back to its original position by the spring 28, while the table will be held in position by the pressure of the plates against the roll 21. The pawls will slide over the ratchets or teeth freely as the
 55 bar is pushed back by the spring. We will now say that the table has been fed forward in this way line by line until it has reached its forward position against the stops 11 upon the forward ends of the track-rails 10, or, in
 60 other words, until the bottom of the page has been reached. It is now necessary to draw the table back in order to start again at the top of the page and to turn over a leaf of the book. This turning of the leaf will be accomplished by removing the book from beneath the roll 21, the book remaining supported upon the book support or table, and

the leaf or leaves may be turned without removing the book therefrom, and the book may then be pushed back under the roll, when it
 70 will be brought into proper position by the automatic action of the spring-supported plates forming the table or support. The table may be easily moved back by disengaging the pawl or pawls from the rack by means of
 75 the small lever 35, connected with the tripping-plate 30^a, by which the pawls may be raised in their upper position and held away from the rack.

As so far described the table included within
 80 in my invention might be used as a simple means for holding a book in a perfectly flat position to be written upon in the ordinary manner. In this case, however, the feed device would be dispensed with.
 85

The type-writer which I have devised for use in connection with my movable table is shown in the various figures of the drawings to consist in suitable swinging type-arms, provided with suitable type-pieces and adapted to move
 90 in horizontal planes and in means whereby these type pieces may be brought one at a time beneath a vertically-operating hammer, adapted to press the same against a suitable inked ribbon and the paper beneath the same.
 95 As shown in Figs. 1 and 2, I provide the rear track 36, supported upon the frame of the desk and upon which the carriage 37 is adapted to move on grooved roller-wheels 38 provided in said carriage. At the forward
 100 end I provide a similar track 39 and rolls, and also in this place a rack 40, with which a suitable gear-wheel 41, secured upon the movable frame of the type-writer, is adapted to engage. This gear-wheel is connected with the
 105 escapement device which is provided upon the type-writer and adapted to operate each time a key-bar or the space-bar is struck by the operator. Any suitable means may be employed for moving the carriage along—such
 110 as a spring secured upon the desk in line with the rack 40 and connected with the frame of the carriage—or a coiled spring constantly tending to rotate the shaft, attached to said gear-wheel 41, or a simple weight passing over
 115 a suitable pulley and connected by a cord with the frame of the machine, the only requisite of such a device being that the tension of the same as applied to the carriage and tending to move the same to the right shall
 120 be practically constant.

The carriage of the type-writer machine is preferably curved and bent into the shape shown in Fig. 1, in order that all of the pivots or shafts may be accommodated with simple
 125 bearings in the frame. The forward ends of the frame are bent upwardly and curved outwardly at 44, so as to bring the frame into line with the shaft 45 and the gear-wheel 41, beneath which the rack 40 is provided in connection with the track 39, secured to the stationary part of the desk. The shaft 45 extends backward through the cross-piece 46, and is provided with the miter-gear 47, adapted

ed to engage with a similar wheel 48, secured upon the shaft 49, adapted to rotate in suitable bearings provided in the ears 50, extending upwardly from the curved portion of the frame 51. Upon this shaft is provided the long coiled spring 52, secured at its inner end to the shaft 49, having its outer end secured upon the frame of the machine or some fixed part thereof. This spring is held in position by the shields 53 placed one on either side of the same, and is adapted to exert its force to constantly tend to rotate the shaft 49 in the direction shown by the arrow in Fig. 1, and thus through the medium of the miter-gear to rotate the gear-wheel 41, engaging with the rack 40, and move the carriage to the right along the ways 36 and 39. The constant rotation of the shafts 49 and 45 is prevented by means of the ratchet-wheel 54, secured upon the shaft 49, and the catch 55 adapted to engage therewith, as shown, and to be normally held in the position shown by the tension of the spring 52, which tends to rotate the wheel 54 and thus normally hold the catch 55 back and bring the stop 56 upon the catch-rod 57 against the cross-piece 46, as shown. This rod 57, with the catch 55, is adapted to move up and down in the slot 58, provided in the cross-piece 46, as shown most clearly in Fig. 8, and the stop 55 is of such length as to always engage with the cross-piece at any height to which the rod 57 may be raised. Pivoted to the rod 57 at 59 is the arm 60, secured upon the shaft 61, upon which the hammer 62 is also secured. Thus as the catch engages with the ratchet-wheel 54 and is drawn into the position shown by the tension of this spring, the hammer 62 will be raised into its upper position, as shown in Fig. 1. The coiled springs 63 wound around the shaft 61 and having their lower ends secured in the frame of the machine are secured also to the hammer 62, as shown at 64, and are adapted to force the same down when the catch 55 with the rod 57 is released from engagement with the ratchet-wheel 54. This catch 55 is adapted to be released each time a letter-key 65 or the space-bar 66 is struck, for as the key-bar 67 is pressed down through the medium of the key-plate 65 the outer end 68 of the bar is brought up against the cross-bar 69, which bears the toothed piece 70, adapted to engage with the under notches of the wheel 54 just as the catch 55 is driven away from the upper portion thereof by the adjustable screw 71, provided in the forward end of the piece 70 and forcibly brought up against the bar 57 when the letter-key is pressed down. The forward end of the space-bar 66 has a similar form to the bar 67 and in the same manner engages with the cross-piece 69. Hence the spaces between words are made by merely pressing down the space-bar 66. Each time the space-bar or the letter-bars 67 are pressed down the catch 55 is moved up, so as to just pass the end of the tooth upon the wheel 54, thus allowing the same to pass from under it. The catch 55 is then immediately forced back into the next notch by the flat spring 72 provided above the same. As the catch 55 drops back, owing to the tension of the coiled spring 63 acting upon the piece 60 and the hammer, the hammer will be forced or snapped quickly down, so as to bring the lower end thereof forcibly against the type beneath the same. The hammer is prevented from going too far down, and thus moving the catch more than one space from the ratchet-wheel 54, by the fixed stop 73. Now as each key-bar provided with an adjustable set-screw 75 is forced down the set-screw is carried against the plate 76 situated beneath the same and adapted to swing upon suitable arms 77, pivoted to the shaft 78, rigidly secured in the carriage-frame. The plate 76 is provided with the downwardly-projecting angle 79, the inner end of which is cut off at an angle, as shown in Fig. 6, against which the small roller 80 presses. This roller 80 is secured upon the swinging type-arms 81, as shown in Fig. 4, and is adapted to rotate freely in suitable bearings 82, provided thereon. Upon this type-arm 81 and a similar arm 86 are secured the types 83, secured thereon by the flat springs 84, extending from the cross-pieces 85, formed upon the ends of the bars 81. The bar 86 is provided with a similar roller 87. These two bars are normally held apart and against the rubber stops 88 and 89 upon the circle-bar 90 by the small spring 91 placed between the rear ends of the arms 81 and 86. A suitable circular guide and support 92 is provided beneath the ends of the arms 81 and 86 to prevent the same from being forced down below their normal levels. These arms 81 and 86 are pivoted upon a stud 93 of the form shown in Fig. 5, and are entirely free of any engagement with each other. As the plate 76 and the angle-plate 79 is forced down the angle end thereof is brought against the roller 80, and as the roller cannot move down, owing to the fact that the rear end of the bar is supported by the circle 92, the arm 81 will be moved around upon its pivot-stud 93, and the type brought under the hammer, which will at just that instant be released to drive the type against the inked ribbon and paper. It is thus seen that the roller 80 merely acts as an anti-friction device. The key-levers will now be released and will be immediately drawn up by the tension of the small spring 94, connected therewith by the lever 95, thus leaving the plate 76 free to be moved up into its normal position by the springs 95² and the tension of the spring 91, which presses the arm and the roller 80 against the inclined end of the piece 79, thus tending to hold the same up. The number of type-keys and the bars 67 is determined by the number of characters which it is desired to use in writing upon the book. These bars are adapted to move up and down in slotted guides 96, provided in the face-piece 97 upon the upright portion 98 of the frame, and are bent in any suitable way

so as to conform with the convenient placing of the parts. The space-bar is preferably placed in a similar slotted guide between the sets of keys upon either side of the middle lines of the carriage. The small spiral springs 94 are adapted to hold the key-bars 67 in their upper position through the medium of the pivoted levers 95 linked thereto, as shown, and engaging with a slot in the upright pins 99, upon which the coiled spring is secured, as shown. This pin has bearings in the cross-pieces 100 and 101, and, as will be seen, is pressed down each time that the key-bar is struck to throw the type-arm around upon its pivot to bring the desired type beneath the hammer. The arrangement is such that these pins act as a stop for the bars 81 and 86, stopping the same just as the desired type comes exactly beneath the hammer, and preventing the same from being carried by. As shown, one of these pins is provided with each key-bar. The plate 76 is duplicated upon the other side of the machine in a plate 102, (shown in Fig. 1,) and upon which and with which key-bars and type-arms like those heretofore described are adapted to engage. The ribbon-plate 103 is provided with the notch 104, over which the type are adapted to be brought to be struck by the hammer 62. The ribbon 105 extends across the opening or notch, thus occupying a position between the type and the paper upon the support. This ribbon extends upwardly upon the sides 103, and is wound upon suitable drums 106, adapted to rotate in suitable bearings provided as shown. These drums are provided with the small pulleys 107 upon the forward end of the shaft, which are adapted to engage with a suitable ratchet-pulley 108 upon the shaft 45 by means of a small belt 109. This pulley 108 is adapted to move with the shaft 45 only when the same is rotated to move the carriage forward. Any backward movement of the same will not affect the pulley 108, as it is loose upon said shaft 45, being only connected therewith by a suitable pawl-and-ratchet device, and thus the ribbon will not be loosened upon the drums. The plate 103 and its upright arms is adapted to swing upon a suitable pivot 110 in the frame. The link-rod 111 is connected with the plate 103 upon either side thereof, and by pressing up upon the finger-lever 112 connected therewith by the angle-pieces 113, one of which is placed at either end of the shaft 114, upon which the lever 112 is secured, the plate 103 may be drawn back so as to expose the line which has just been written. The connection between the levers 95 and the shaft 114 is loose, so that the movement of one will not affect the other. I preferably provide two rollers 115, one at either end of the carriage, and supported thereon in any suitable manner, said rollers being adapted to engage with the under surface of the track 40 to prevent the carriage from jumping the track. The spring 63 may be tightened so as to snap the hammer down

with greater force by adjusting the upper end 116 of the spring in the notches of the notched bars 117 secured upon the frame.

When it is desired to move the carriage to one side or the other, it becomes necessary to disengage the catch 55 from the ratchet-wheel 54. For this purpose I provide the thumb-lever 118, pivoted upon the frame of the machine, as shown, and limited in its swing by suitable pins 119. By pressing down upon this lever the catch 55 and the rod 57 may be raised above the teeth of the wheel 54, when the carriage may be pushed back against the tension of the spring 52.

I preferably provide several of the pawls 30 within the shield 31, the pawls being different lengths, as shown, the difference in length between the longest and shortest being less than the length of one notch in the rod 23, thus making sure the accurate engagement of the movable table with the feed-rod 23.

By reference to Fig. 3 it will be seen that the bearings that hold the upper cross-rods of the spring-brackets are so placed that the plates 12 and 13 may be moved in and brought together at their inner edges, as shown in dotted lines, to form one continuous flat plate, thus providing a smooth surface, upon which a wide sheet of paper may be placed to be written upon. I sometimes provide small cross-rollers coincident with the upper surfaces of the plates and parallel with the roller 21, the office of these rollers being to make easy the insertion and removal of the book, which may be quite heavy.

The tracks 36 and 39 are made of such length as to admit of the carriage being moved off the book, so as to admit of the removal of the book or the turning of a page thereof. The reversal of the inking-ribbon is accomplished by throwing off of one of the belts 109 and 120 (shown in Fig. 12) and putting on the other, whereby the rolls are made to revolve in an opposite direction. It is obvious that the coiled spring 52 will be wound up when the carriage is moved to the left, and, further, it is obvious that the details of construction and arrangement of parts may be varied in many ways without altering the principle of or making a departure from my invention.

It will be seen that the brackets by which the plates forming the book support or table are supported are arranged so as to give the plates a slight backward movement as they are depressed. This is of special advantage in placing large cumbersome books in position for writing upon them, as the books are simply laid upon these plates with the end near to the transverse roll 21, and are then given a downward and forward shove or push, which carries the book beneath the roller 21, this roller turning to facilitate the insertion of the book. By this means the book is readily inserted, and as it comes beneath the roller the spring-supported plates automatically adjust themselves to the varying thickness of

the parts of the book without any attention from the operator, the upper surface of the book upon which the writing is to be made being thus automatically brought into position to be written upon by the type-writer. It will also be seen that it is not necessary to handle the book except for the purpose of putting it in position. When it is desired to turn a leaf of the book, the type-writer may be moved to one side and the book drawn from under the roller 21, its weight, however, remaining upon the book-support, and as soon as the leaf is turned the book is pushed back under the roller. This obviates the necessity of removing the book-support from beneath the type-writer each time the leaf is to be turned or a correction to be made. This is especially advantageous in the case of large and bulky books, the frequent removal of which would severely tax the strength of the operator.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. The combination of the automatically-adjustable and the movable book-support with a stationary roller adapted to hold a book upon said support flat open, suitable tracks upon which said support is adapted to move, means for moving said support forward upon said tracks step by step, and a suitable type-writer movably supported above said support and adapted to print characters upon the book held beneath said roller and upon the support, substantially as described.

2. The combination of a suitable base adapted to slide upon suitable tracks or guides, means by which said base may be advanced step by step upon said guides, suitable spring-plates supported above said base and adapted to move to and from the same through planes lying parallel with said base, a suitable stationary roller secured above said base-plate and adapted to confine a book placed between the same and said plates in a flat open position, a suitable type-writer adapted to print upon the open page of said book, said type-writer being supported upon suitable tracks lying parallel with said roller, whereby said type-writer is adapted to move laterally from side to side across the page or pages of the book held between said roller and said spring-plates.

3. The combination, with the base 2, of the spring-brackets 15 and 16, the plates 12 and 13, supported upon the upper ends of said brackets, for the purpose set forth.

4. The combination, with a suitable automatically-adjustable and movable book or paper support, of a movable type-writer arranged to print letters or characters upon a book or paper arranged upon said support, means for moving said support longitudinally to provide the spaces between the lines, and means for moving the type-writer laterally to provide the spaces between the letters or characters and words.

5. The combination, with the base and book-support, of the rack-rod 23, occupying a substantially horizontal position, the adjustable stop in the rear end thereof, the springs pushing against the forward end of said rod, and the pawl or pawls 30, pivoted upon said base and adapted to engage said rack-rod, whereby the said base with the said book or paper support may be moved forward step by step at will, substantially as described.

6. The combination of the adjustable movable support, consisting in the movable base 2 and the independently-movable plates 12 and 13, pivoted upon the said base by the spring-brackets 15 and 16, with a suitable track upon which the support is adapted to be moved, means for moving said support forward step by step, the roller 21, secured above said plates, stationary tracks 36 and 39, and the type-writer adapted to move from side to side thereon across the width of said support, substantially as described.

7. The combination, with the book or paper support, of the type-writer carriage provided with the spring-hammer 62 suitably pivoted upon said carriage, the notched ribbon-plate 103, supported upon said carriage and adapted to hold the inked ribbon, the swinging type arm or arms pivoted upon said carriage and provided with the spring-supported types, means whereby said types may be successively carried around under said hammer and whereby said hammer may be successively released as the desired types are brought beneath the same, and means whereby said carriage is regularly advanced across said support, substantially as described.

8. The combination, in a type-writer adapted for use in connection with a suitable movable support adapted to hold the paper or book in a horizontal plane, of a suitable carriage-frame provided with suitable rollers adapted to engage the tracks 36 and 39 with the shaft 61, the spring-hammer 62, supported thereon, the plate 103, provided with the notch across which the type-writer ribbon extends, said notch and ribbon lying beneath the forward end of said hammer, the shaft 49, provided with the miter-gear, the rack 40, the gear-wheel 41, and the shaft 45, extending between said gear-wheel and said miter-gear, the ratchet-wheel 54 upon said shaft 49, the catch 55, the rod 57 provided with the stop 56 and pivoted to said hammer, the key-bars 67, provided with the set-screw 75, the levers 95, linked to the forward end of said key-bars, the pins 99, provided with the coiled spring 94, the plates 76 and 102, having the portions 79, the inclined inner ends of said plate 79 adapted to engage the arms 81 and 86, the types provided upon the forward end of said arms 81 and 86 and adapted to be swung over the notch 105 and beneath said hammer, said pins 99, adapted to serve as stops to limit the movement of said arms 81 and 86, means for normally supporting said plates 76 in their upper position, the space-bar 66, the catch

and tripping device adapted to move into engagement with said ratchet-wheel 54 and to trip said catch 55 when either a key-bar or the space-bar is pressed down, and means for propelling said carriage along said tracks toward the right, substantially as described.

9. The combination, with the carriage-frame described, of the type-arms 81 and 86 pivoted centrally in the frame, the small friction-rolls in the ends of said arms, said arms being normally held out by the spring 91, the circle plate or guide 90, across which the type-arms are adapted to move, the type-arms 83, supported upon the flat springs 84, attached to said arms, the angle-plates 79, having inclined ends adapted to engage the small rolls, the plates 76 and 102, adapted to engage the set-screws 75 of the key-bars, the levers 95, linked to said key-bars, said key-bars being pivoted upon the shaft 67 and said levers upon the shaft 114, the pins 99, engaging the ends of said levers 95 and provided with the coiled spring 94, said pins being adapted to move vertically in bearings 101 and 100 and to serve as stops for said type-arms when the proper letter has been brought under the spring-hammer 62, and means for releasing said hammer successively as the desired letters are brought beneath the same.

10. The combination, with a catch-bar 57, provided with a catch 55, adapted to engage the ratchet-wheel 54, of the thumb-lever 118, adapted to engage said bar 57 for the purpose of disengaging the catch 55, whereby the type-writer carriage may be moved entirely to the right or left along the tracks 36 and 39, substantially as described.

11. The combination, with the type-levers pivoted upon the shaft 67, of the adjustable set-screws 75, adapted to engage the plates 76 and 102, through the medium of which the type-carriers 81 and 86 are operated, substantially as described.

12. The combination, with the top of the type-writer table or desk, of the tracks 10 provided thereon, the movable book-support adapted to slide on said tracks, the stops 11 in said track adapted to limit the movement of said support, the rack-rod 24, adapted to slide in the guides 25 and 26, the spring 28, the adjustable stop-screw 33, the several pawls 30 of different lengths, and the tripping-plate adapted to be operated by the lever 25 to disengage said pawl from the rack 24, substantially as described.

13. The combination, with suitable slide-ways or tracks, of the adjustable book-support adapted to move thereon, consisting of the base, the independently-movable plates 12 and 13, the spring-brackets 15, secured on said base by clips or hinges 18, and upon said plates by clips or hinges 17, and the springs 19, adapted to normally press said brackets upwardly, substantially as described.

14. The combination, in a self-adjusting book-support, of the base with the independ-

ent plates 12 and 13, the rectangular brackets 15 set at an angle with the base and extending between the base and said plate and pivotally secured thereon, springs adapted to press said brackets upwardly, the arrangement of said plates on the upper portions of said springs being such as to adapt the plates to be moved in close together or separated, substantially as described.

15. The combination, with the base, of the plates 12 and 13, the spring-brackets 15 and 16, the clips 18, clips 17, the springs 19, whereby said plates are made independently movable and adapted to move forward and down, and a roller 21, substantially as described.

16. The combination of the plates 12 and 13 with the base having the cross-pieces 3 and 4 and the upright 5, the plate 6 on said upright, and the spring-brackets 15 and 16, provided between said base and said plate, said brackets extending transversely beneath said plate, substantially as and for the purpose specified.

17. The combination of a movable and automatically-adjustable book-support, of means for holding a book thereon, means for moving said support step by step to produce line-spacing, a suitable type-writer arranged above said support and adapted to print characters on a book or paper arranged thereon, and means for moving said type-writer from above said support.

18. The combination, with a book-support adapted to automatically adjust itself to the form of a book placed thereon and to hold the same in a flat open position, of tracks arranged above said support, a type-writer arranged above said support and upon said tracks and adapted to be moved upon the same away from above said support, whereby free access may be had to the support and the book thereon.

19. The combination, with an automatically adjustable and movable book-support, of means for advancing said support step by step, said support adapted to receive a book or paper and to hold the upper surface of the same in a level flat position, tracks arranged above said support, a type-writer adapted to print characters upon said book or paper and adapted to be moved laterally upon said tracks and across said supports, means for moving said type-writer step by step to space the letters and words, said tracks being longer than the width of said support and said type-writer adapted to be moved thereon to one side and from above said support, substantially as described.

20. The combination, with an automatically-adjustable spring-supported two-part book-support and means for holding a book thereon, of a type-writer arranged above said support and adapted to print characters on a book arranged upon said support.

21. The combination, with a book-support consisting of independent spring-supported

plates, and a transverse roller above said support, against which a book is adapted to be pressed by said book-support, of a type-writer arranged above said support, adapted to print
5 characters on a book or paper arranged thereon, and means for moving said type-writer from above said support.

In testimony whereof I have hereunto set my hand this 22d day of August, 1890.

SEWARD A. DEAN.

In presence of—

A. M. GASKILL,
C. G. HAWLEY.