(No Model.) 2 Sheets—Sheet 1.

D. ALLEN, Jr.

TYPE WRITING MACHINE.

No. 410,627. Patented Sept. 10, 1889.

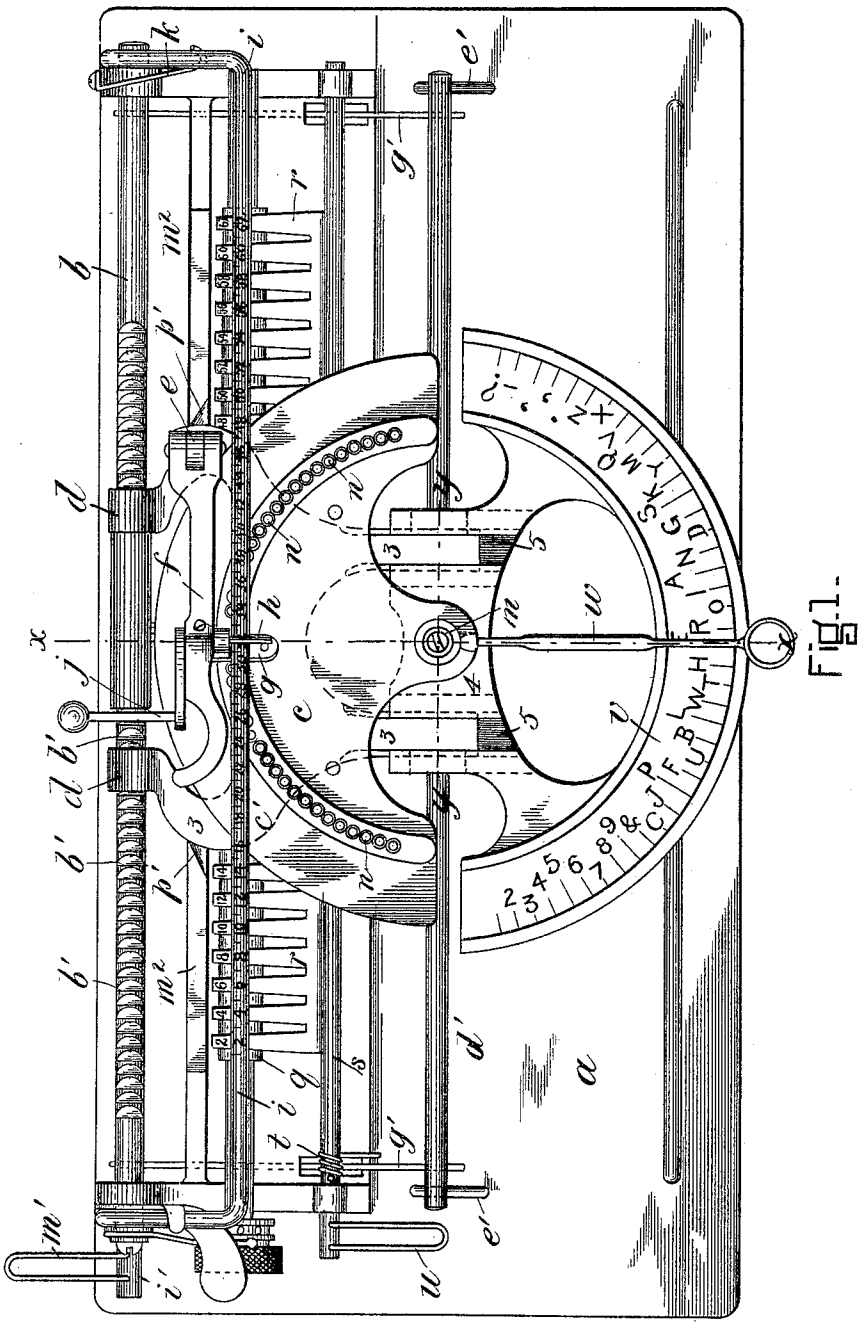


Fig. 1.

WITNESSES

Chas. Spaulding.

Charles E. Moss.

INVENTOR

Daniel Allen Jr

by Wright Brown & Crosby

Attys.

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

(No Model.) 2 Sheets—Sheet 2.

D. ALLEN, Jr.

TYPE WRITING MACHINE.

No. 410,627. Patented Sept. 10, 1889.

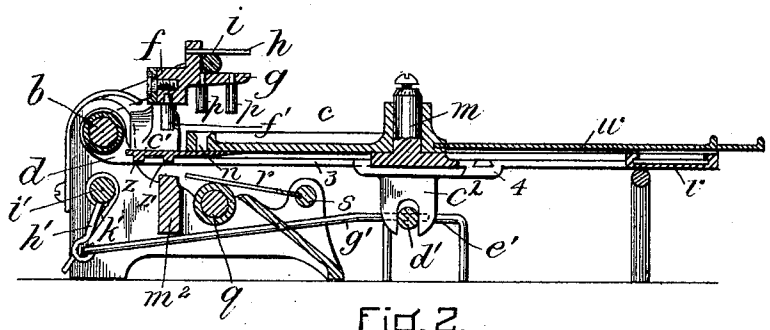


Fig. 2.

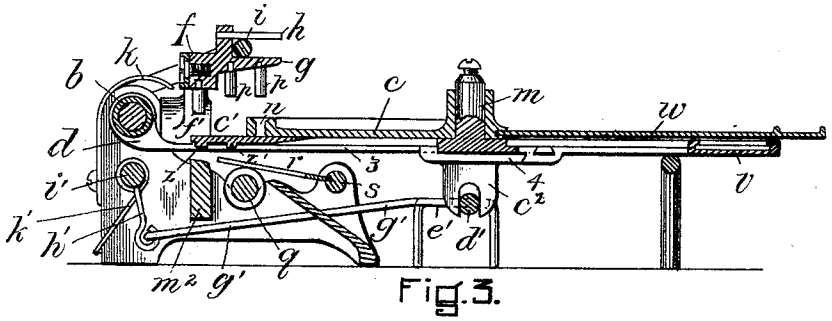


Fig. 3.

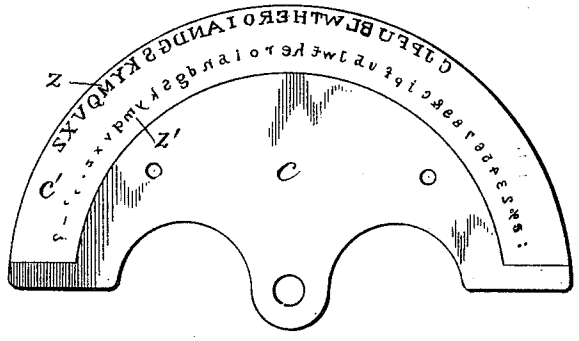


Fig. 4.

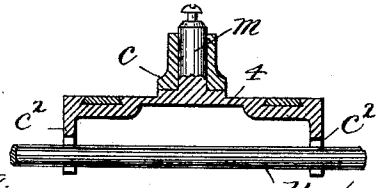


Fig. 5.

WITNESSES.

Chas. Spaulding.

Charles E. Moss.

INVENTOR.

Daniel Allen Jr.

by Wright Brown & Crosby Attys.

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

UNITED STATES PATENT OFFICE.

DANIEL ALLEN, JR., OF BOSTON, MASSACHUSETTS, ASSIGNOR TO THE TYPE-WRITER IMPROVEMENT COMPANY, OF PORTLAND, MAINE.

TYPE-WRITING MACHINE.

SPECIFICATION forming part of Letters Patent No. 410,627, dated September 10, 1889.

Application filed November 21, 1887. Serial No. 255,693. (No model.)

To all whom it may concern:

Be it known that I, DANIEL ALLEN, Jr., of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Type-Writing Machines, of which the following is a specification.

This invention relates to a type-writing machine having printing characters or types arranged in a segmental series on a plate or segment which is pivoted to a sliding carriage, and is enabled by the sliding movement of the carriage and by its own movement in either direction on its pivot to present either of its characters or types to a printing-lever adapted to press the type upon a sheet of paper held by suitable devices forming a part of the machine and to print upon said sheet, as shown in Letters Patent to J. Becker, October 12, 1886, No. 350,717.

The invention has for its object to enable the upper and lower case characters to be printed by the same type-carrying segment; and to this end it consists in a type-carrying segment having two concentric series of characters, one comprising the upper and the other the lower case, the said segment being movable, so that either series of characters may be brought into position for one of its members to be acted upon by the printing-lever.

The invention also consists in certain details and minor improvements, all of which I will now proceed to describe and claim.

Of the accompanying drawings, forming a part of this specification, Figure 1 represents a top view of a type-writing machine provided with my improvements. Fig. 2 represents a section on line *x x*, Fig. 1, showing the type-carrying segment in position for printing with the lower-case characters. Fig. 3 represents a similar section showing said segment in position to print with the upper-case characters. Fig. 4 represents a view of the type-carrying segment inverted. Fig. 5 represents a section on line *y y*, Fig. 1.

The same letters of reference indicate the same parts in all the figures.

In the drawings, *a* represents the supporting-base, to which is affixed a frame supporting a fixed horizontal ratchet-bar *b*, having the ratchet-teeth *b'*. The type-carrying segment *c* is mounted in a carriage 3 4, having perforated ears *d d*, through which the ratchet-bar *b* passes, said frame being adapted to slide upon the said bar. To an ear *e* on the carriage is pivoted a lever *f*, hereinafter called the "printing-lever," which is adapted to oscillate in a vertical plane and has a laterally-projecting arm *g* and a pin or stud *h*.

i represents a rocking-lever, the main portion of which is parallel with the ratchet-bar *b*, its ends being bent at right angles and formed with eyes embracing said ratchet-bar and enabling the lever *i* to rock or oscillate on the ratchet-bar. The rocking lever *i* passes between the arm *g* and pin *h* of the printing-lever *f*, and when oscillated also oscillates the printing-lever, a dog *j*, pivoted to the printing-lever, being caused to engage a tooth of the ratchet-bar by each depression of the rocking lever *i*, and thus move the carriage one step in its progressive movement. At the same time a pin or plunger *f'* on the printing-lever acts on the flexible type-sheet *c'*, attached to the segment *c*, and presses a character thereof upon the paper sheet which is placed on the machine to receive impressions from the types. The rocking lever and printing-lever are normally supported in a raised position by a spring *k*, and are depressed against the stress of said spring by the downward pressure of the operator's hand on the rocking lever. The type-carrying segment *c* is pivoted at *m* to the carriage, and has a series of orifices *n* concentric with the pivot *m*. The flexible rubber type sheet or plate *c'* is attached to the segment *c* and projects from the segmental edge thereof, and is provided with printing-characters, which are also concentric with the pivot *m*, and are arranged to be depressed over the paper-supporting bed or bar m^2 by the plunger *f'* on the printing-lever. The concentrically-arranged holes *n* in the type-carrying segment co-operate with a pin *p* on the printing-lever, said series of holes constituting what is termed in said Becker patent a "centering device," whereby each printing-character is properly centered or placed under the plunger of the printing-lever.

q represents a rubber-coated paper-feeding

roller, which is journaled in bearings in the frame of the machine, and r represents a comb-shaped plate arranged over the feeding-roller and attached to a rocking rod s, which is journaled in bearings in the frame of the machine, and is provided with a spring t, whereby it is normally turned, so as to press the teeth of the comb-shaped plate upon the paper passing over the roller q, and with a handle u, whereby said plate may be raised to release the paper.

v represents an index-plate connected to the carriage and provided with a representation of the characters of the type-segment arranged concentrically with the pivot m of said segment and co-operating with an operating-lever w, attached to said segment.

The description thus far given is mainly applicable to the machine shown in the above-named Becker patent, and its general operation is substantially the same as that described in said patent, the type-segment being turned by the operator to bring any desired character under the plunger of the printing-lever, and said character is pressed upon the paper by a depression of the printing-lever, which depression also moves the carriage along one step and centers the type for the printing-plunger f'. Heretofore the type-carrying segment has had but one series of printing-characters, so that the machine has been capable of printing only one kind of letters—viz., upper-case. In carrying out my invention I provide the type-carrying segment with two concentric series of printing-characters z z', (the former including the upper and the latter the lower case letters,) and make said segment movable toward and from the ratchet-bar and printing-lever, so that either series can be brought under the printing-lever. To this end I make the carriage in two sections 3 and 4, the section 3 having the ears d d, which slide on the ratchet-bar b, and the ear e, to which the printing-lever is pivoted, while the section 4 is adapted to move on the section 3 toward and from the ratchet-bar and supports the type-carrying segment c and the index-plate v. The section 4 may be secured to the section 3 in any desired manner, so as to permit the described independent movement of the type-carrying segment. I have here shown the section 3 provided with two parallel dovetail extensions, serving as guides on which the section 4 slides, the latter having dovetail grooves 5 5, Fig. 1, which receive said guides. It is obvious, however, that various other devices may be adopted to engage the two sections and permit the independent movement of the section 4. The section 4 is provided with downwardly-projecting notched or forked lugs c^2 c^2, adapted to engage a bar d', which is parallel with the ratchet-bar b, but is supported on guides e' e', on which it is adapted to slide laterally. Said bar is connected by rods g' g' with arms h' h', attached to a rock-shaft i', which is journaled in fixed bearings in the frame of the machine. A spring k', secured at one end to said rock-shaft and bearing at the other end on the frame, normally holds the rock-shaft in the position shown in Fig. 2, said rock-shaft acting through the arms h', rods g', and bar d' to hold the type-carrying segment with the series of lower-case letters in operative relation to the plunger of the type-lever, so that the normal operation of the machine will be to print the lower-case letters. The rock-shaft i' has a lever-arm m', which, when pressed downwardly by the operator, turns the rock-shaft to the position shown in Fig. 3, and causes it, through the arms h' and rods g', to force the bar d' and the section 4 of the carriage employed therewith backwardly until the series of upper-case letters are in operative relation to the printing-lever, so that the machine will print upper-case letters so long as the rock-shaft is held in the position last described. The printing-lever is provided with two pins p, one arranged to co-operate with the holes n of the centering device when the type-carrying segment is in one position, and the other when said segment is in the other position, as shown in Figs. 2 and 3.

From the foregoing it will be seen that when the operator desires to print an upper-case letter he turns the rock-shaft i' against the pressure of the spring k', and thus moves the type-carrying segment back and presents its upper-case letters to the printing-lever. When the rock-shaft is released, its spring k', through the described devices, returns the type-carrying segment to position to print lower-case letters.

The machine is to be provided with suitable type-inking devices—such, for example, as are shown in the Becker patent—and as I have not devised any special inking devices I have not deemed it necessary to show any means for inking. I provide the rocking lever i with lines and figures, as shown in Fig. 1, thereby enabling it to serve in the twofold capacity of an actuator for the printing-lever and carriage and a gage to enable the operator to correctly replace the paper when corrections in or additions to matter already printed are required. I have also shown the teeth of the comb-shaped plate provided with numerals for the same purpose, said numerals also co-operating with the combined rocking lever and gage, or with any other gage that may be applied to the machine. I provide the carriage with pointers p' p', the points of which register with one edge of the fixed bar or bed which supports the paper under the printing-lever, as shown in Fig. 1. These pointers enable the operator to so replace a sheet that has been already printed on that characters added to a line thereon shall be in exact alignment with the other characters of said line, the ends of the pointers registering with the bottom of the printed line when the

latter is in position to be in line with characters subsequently printed.

The operator in manipulating the machine operates the shifting mechanism, the space-lever, and rocking lever *i* with the fingers of one hand, while he moves the type-segment with the other hand, in this way being enabled to keep the machine in constant and rapid motion without stopping to adjust for printing different characters.

I claim—

1. In a type-writer, the combination, with the paper support or guide, the longitudinal guides, the carriage movable thereon, and the feeding mechanism for automatically feeding the carriage forward when a type has been depressed, of the movable type-carrying segment bearing concentric rows of type mounted on said carriage in fixed guides at right angles to the line of movement of the carriage and a shifting-bar mounted on fixed guides and engaging said segment to shift the same, whereby the types in said concentric rows may be brought to the proper printing-point, substantially as described.

2. In a type-writing machine, the combination, with a paper support or guide, a carriage mounted on longitudinal guides, and a printing-lever thereon, of a type-carrying segment provided with concentric series of characters mounted on an axis or pivot which is movable in fixed guides on and at right angles to the line of movement of the carriage, and a shifting-bar mounted in fixed guides and engaging said pivot, whereby the types in said concentric series may be brought to the proper printing-point, substantially as described.

3. In a type-writing machine, the combination of a carriage mounted on longitudinal guides and made in two parts or sections, one of which is independently movable in fixed guides at right angles with the usual movement of the carriage, a type-carrying segment having a plurality of series of printing-characters pivoted to the said independently-movable section, a printing-lever pivoted to the other section of the carriage and engaging said printing-characters to print the same, and a shifting-bar mounted in fixed guides and engaging said independently-movable section for moving the section to bring either series of characters into operative relation with the printing-lever, as set forth.

4. In a type-writing machine, the combination of a carriage made in two parts or sections, one of which is independently movable at right angles with the usual movement of the carriage, a type-carrying segment having a plurality of series of printing-characters pivoted to the said independently-movable section, a printing-lever pivoted to the other section of the carriage, a laterally-sliding bar, as *d'*, arranged to be engaged by slotted lugs with the independently-movable section of the carriage, and means, substantially as described, for moving said rod laterally, and with it the type-carrying segment and the section of the carriage supporting it, as set forth.

5. In a type-writing machine, the combination of a carriage made in two parts or sections, one of which is independently movable at right angles with the usual movement of the carriage, a type-carrying segment having a plurality of series of printing-characters pivoted to the said independently-movable section, a printing-lever pivoted to the other section of the carriage, and a laterally-sliding bar, as *d'*, arranged to be engaged by slotted lugs on the independently-movable section, a spring-controlled rock-shaft journaled in fixed bearings, and connections between said rock-shaft and rod, whereby the latter is moved by the rotation of the former, as set forth.

6. In a type-writer, the combination, with the longitudinally-movable carriage, the type-segment carrying concentric rows of printing-characters thereon and movable in fixed bearings in a direction at right angles to the line of movement of the carriage, and the printing-lever, of centering-pins co-operating with the type-segment to center the type in any of said concentric rows, substantially as described.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 18th day of November, 1887.

DANIEL ALLEN, JR.

Witnesses:
C. F. BROWN,
W. C. RAMSAY.