(No Model.) 4 Sheets—Sheet 1.

A. MATTESON.

TYPE WRITING MACHINE.

No. 567,349. Patented Sept. 8, 1896.

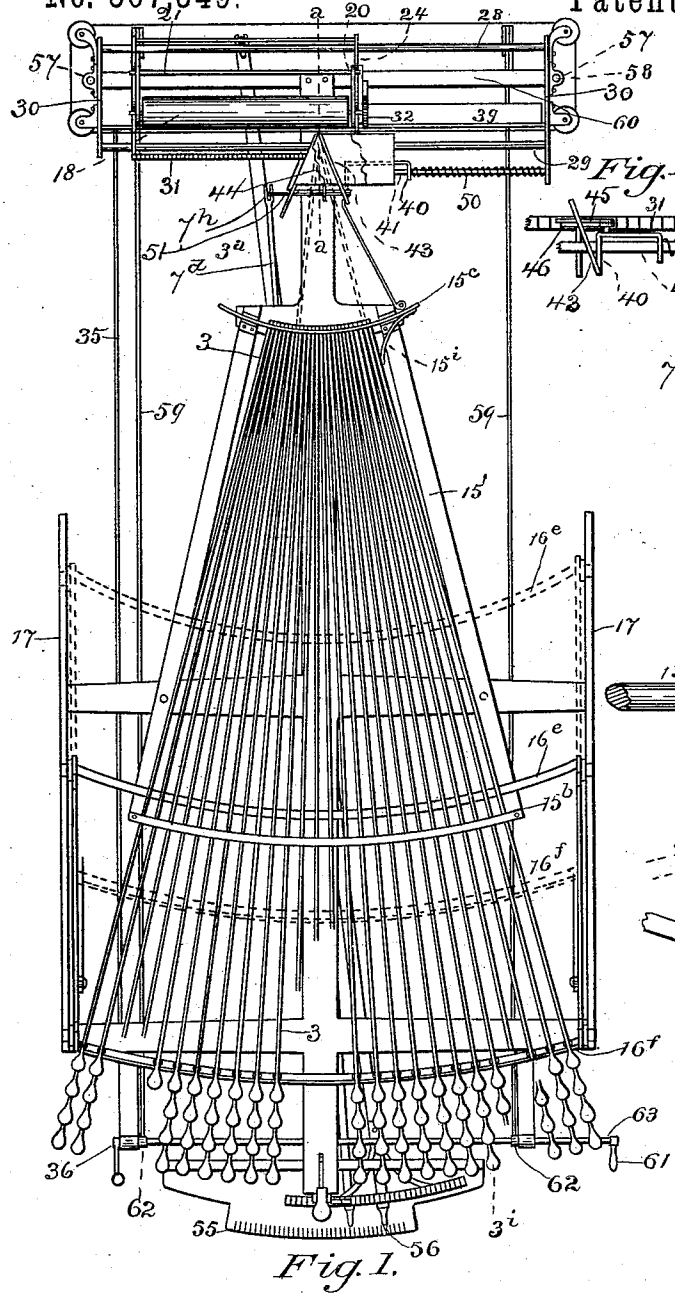

Fig. 1.

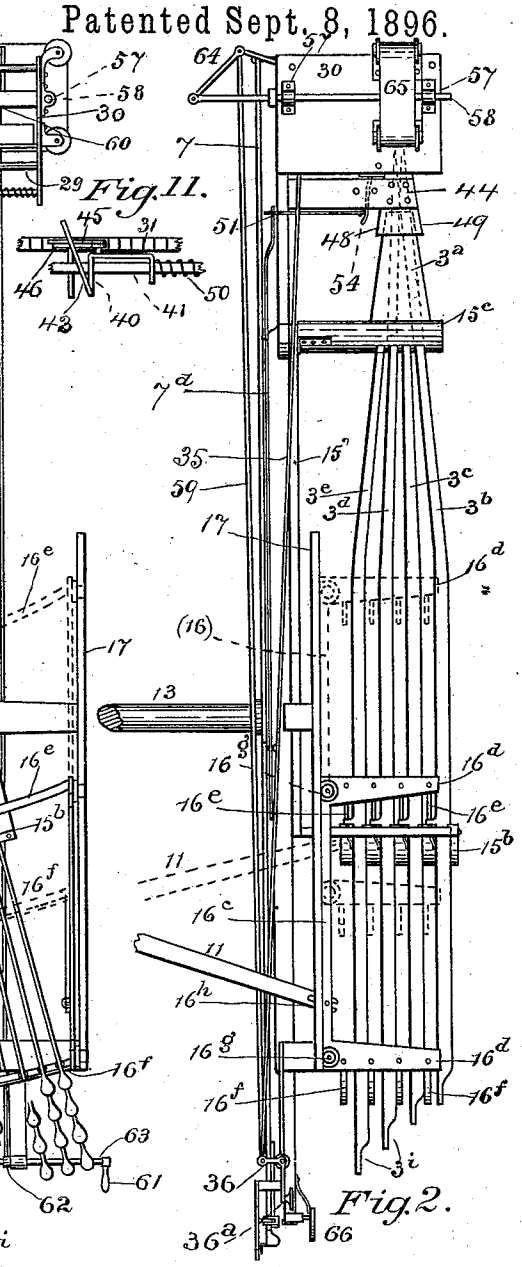

Fig. 2.

Fig. 11.

Witnesses:

Thos. Hoon
Geo. W. McCoy

Inventor,
Adelbert Matteson
By J. Geisler
his Attorney.

(No Model.) 4 Sheets—Sheet 2.

A. MATTESON.

TYPE WRITING MACHINE.

No. 567,349. Patented Sept. 8, 1896.

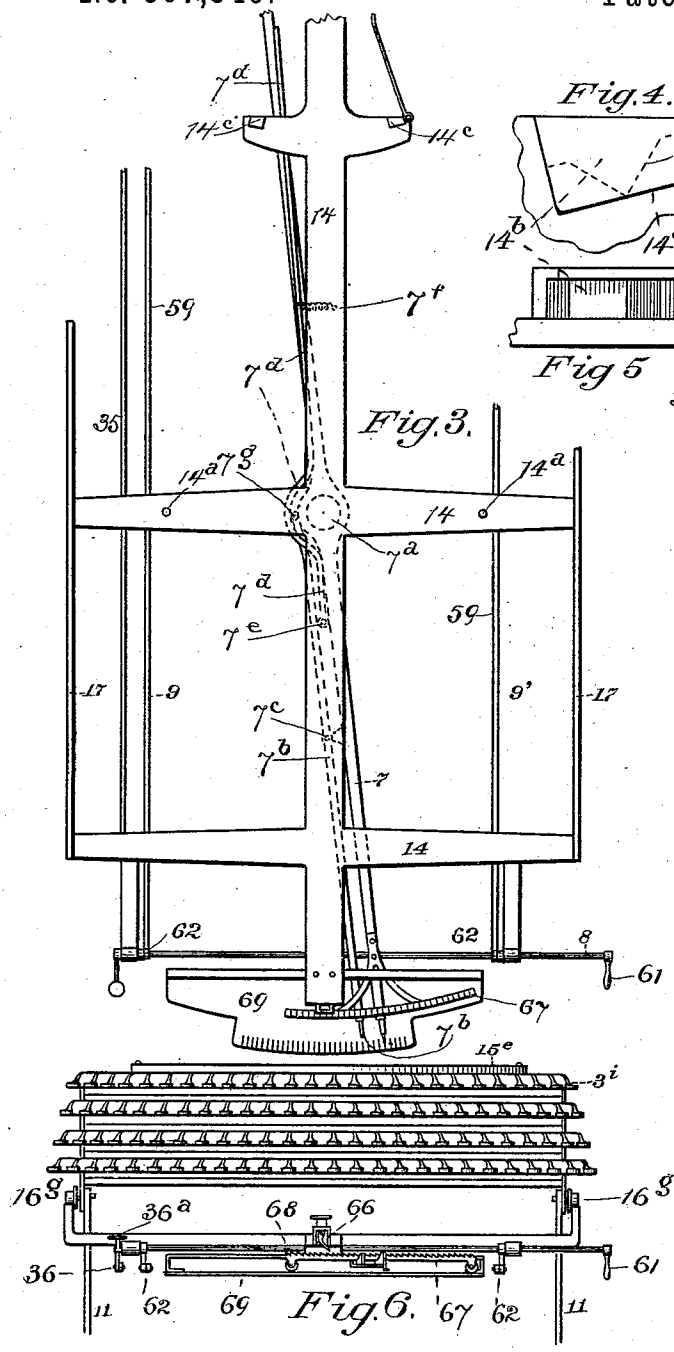

Fig. 3.

Fig. 4.

Fig 5

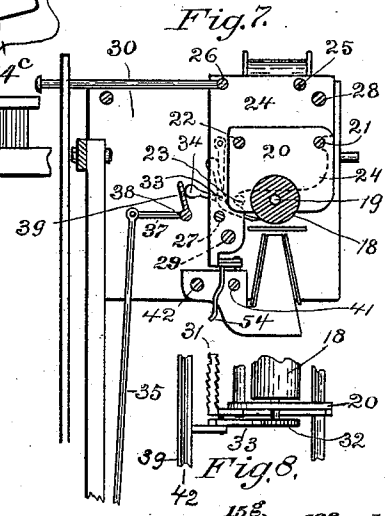

Fig. 7.

Fig. 8.

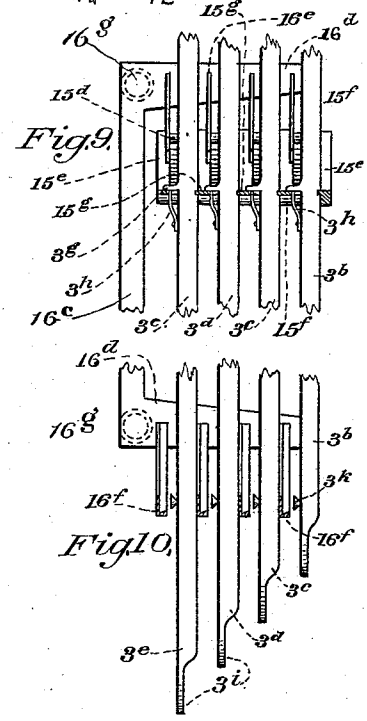

Fig. 9.

Fig. 10.

Witnesses:
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Geo. W. McCoy

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(No Model.) 4 Sheets—Sheet 3.

A. MATTESON.

TYPE WRITING MACHINE.

No. 567,349. Patented Sept. 8, 1896.

Fig. 12.

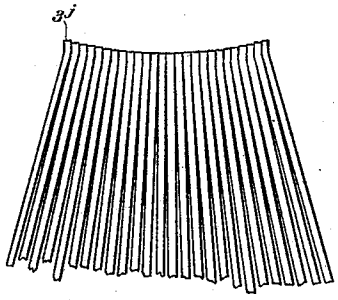


Fig. 13.

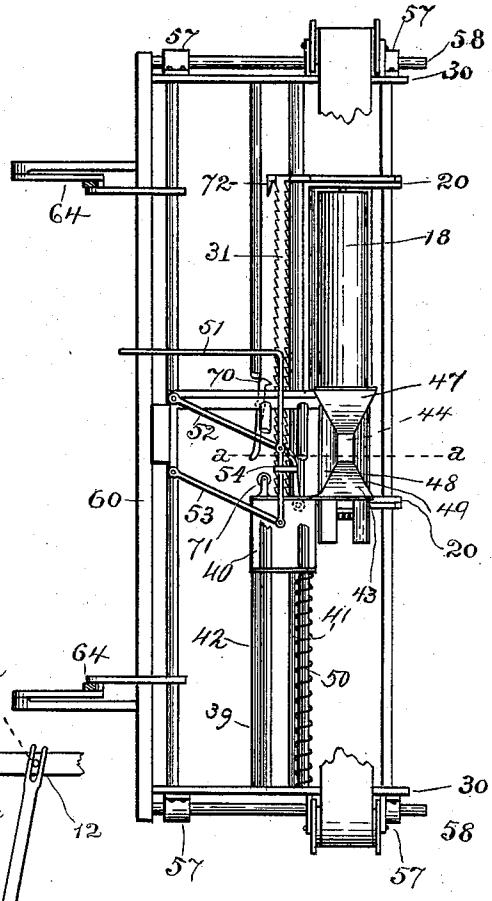
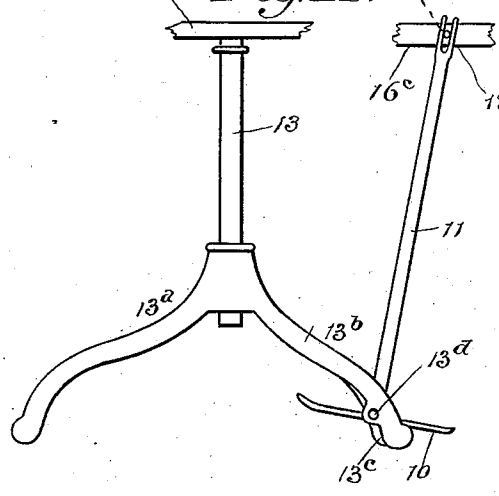


Fig. 14.



Witnesses:

F. Peterson

Geo. W. McCoy

Inventor;

Adelbert Matteson

By F. Geisler

His Attorney.

(No Model.) 4 Sheets—Sheet 4.

A. MATTESON.

TYPE WRITING MACHINE.

No. 567,349. Patented Sept. 8, 1896.

Fig. 15.

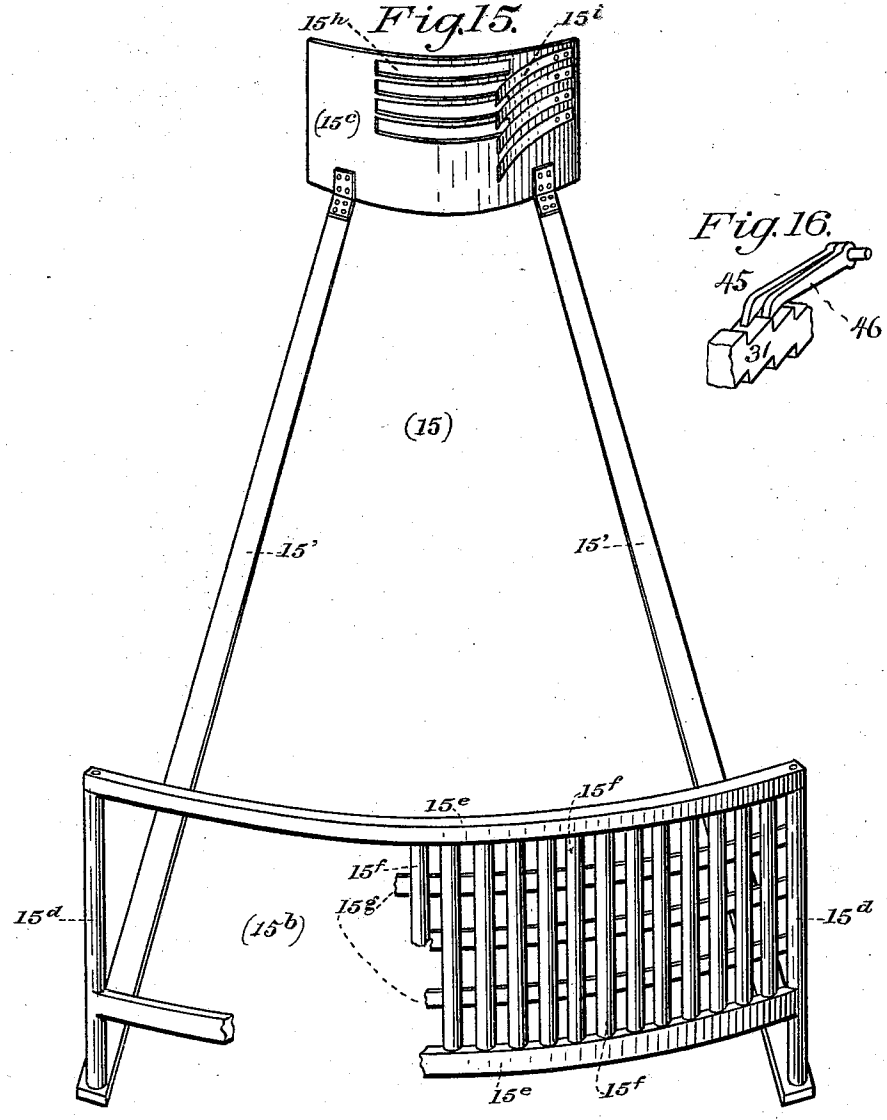


Fig. 16.

Witnesses:

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Geo. W. Foley

Inventor,
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UNITED STATES PATENT OFFICE.

ADELBERT MATTESON, OF PORTLAND, OREGON.

TYPE-WRITING MACHINE.

SPECIFICATION forming part of Letters Patent No. 567,349, dated September 8, 1896.

Application filed July 26, 1893. Serial No. 481,578. (No model.)

To all whom it may concern:

Be it known that I, ADELBERT MATTESON, a citizen of the United States, residing at Portland, Multnomah county, State of Oregon, have invented a new and useful Improvement in Type-Writing and Type-Setting Machines, of which the following is a specification, reference being had to the accompanying drawings as forming a part hereof.

My invention relates to that class of type-writers or printing-machines whereby one or more letters or characters, constituting part of a word or even a whole word or other representation of an idea, may be printed at the same time with a single manipulation of the hand to afford rapidity in writing; but in the practical use of my invention the same is intended as an adjunct to the printing-office, being a machine by means of which the matter of the manuscript may be set to type for printing in substantially the same manner as such matter could be written on the type-writer, the letters or characters being stamped or pressed into the surface of a sheet of metal or other material susceptible of receiving an impression placed upon the platen, and which sheet, after having received the impressions of the characters to be printed, is then provided with a suitable backing, as, *e. g.*, described in Letters Patent to Benj. B. Huntoon, dated May 11, 1875, No. 163,204, to form a matrix or intaglio-mold from which a stereotype may be made.

To further facilitate this use of my invention, I have constructed the same so that the type-bars are contained in an independent and detachable frame which may be removed from the coöperating mechanism and substituted by another frame holding a set of type-bars of different style or character to enable one to do different styles of printing with the same machine. This, in brief, is an outline of the object of my invention. The construction, use, and advantages thereof will appear from the accompanying drawings, which are referred to as a part of this specification, and which represent as follows:

Figure 1 is a plan of my machine complete, the stand therefor, however, not being shown and some parts broken away to avoid confusion, and the parts 16^e and 16^f, seen in dotted lines, representing the bars 16^e and 16^f of the carriage for the type-bars thrown forward, and a few of the type-bars being also shown in dotted lines thrown against the platen to help the description thereof. Fig. 2 is a side elevation of the same mechanism seen in Fig. 1. Fig. 3 is a partial plan of the bed-plate on which the frame holding the type-bars is supported, and this figure further shows in part (7) the mechanism for shifting the position of the platen and part of the mechanism (8, 9, and 9′) for lifting the platen, its carriage, and supports to write upper or lower case letters, as it may be. Figs. 4 and 5 are details which will be referred to again in the course of my description of my invention. Fig. 6 is an end elevation of the mechanism seen in Figs. 1 and 2. Fig. 7 is a vertical section on the line *a a* of Figs. 1 and 13. Fig. 8 is a partial front elevation of the platen and its supporting and operating mechanism. Figs. 9 and 10 are details of my type-bars, of the frame for holding the same, and of the carriage for conveying the bars against the platen, these figures illustrating how said parts coöperate with each other. Figs. 11 and 12 are details of construction of a part of the platen-operating mechanism and of the type ends of the type-bars, which details can be better explained in the description of my invention hereinafter. Fig. 13 is a front elevation of the platen, its coöperating and supporting mechanism and contrivances. Fig. 14 is an elevation of the stand for my machine and treadle for operating the carriage conveying or throwing the type-bars against the platen. Fig. 15 is a partial perspective view of the frame holding the type-bars to show the construction thereof; and Fig. 16 is a detail of the platen-operating mechanism, which will also be explained later.

The figures represent the parts referred to in describing my mechanism.

In Fig. 14, as mentioned, the stand of my machine is shown, and may consist of a bed-plate 14, supported on a standard or post 13, having three legs, one in the rear, 13^a, and two in front, 13^b and 13^c.

The front legs are provided with bearings 13^d, in which a rod having a treadle 10, rigidly mounted thereon, is pivoted. A pair of arms or bars 11, provided with a fork at the upper ends 12, are also rigidly mounted on

said treadle-rod and move with such treadle when operated. Leaving this portion of my mechanism for the present, the bed-plate 14 supports the frame 15, holding the type-bars 3. A perspective and enlarged view of this frame is shown in Fig. 15, and consists of the bars 15′, having mounted thereon at their front ends a segment-shaped bearing or guiding frame 15^b for holding one end of the type-bars, (see Fig. 2,) and another segment-shaped bearing or guiding frame 15^c, mounted on their other ends for holding the other ends of such type-bars.

The front bearing or guiding frame 15^b consists of the vertical end bars 15^d, upper and lower segment-bars 15^e, a series of vertical bars 15^f, and a series of longitudinal segment-bars 15^g, (see also Fig. 9,) and the said rear bearing or guiding frame 15^c, above referred to, consists of a vertical segment-plate provided with a series of horizontal slots 15^h and springs 15^i. The figure 15 and its derivatives relates and refers generally to my frame or some part of the frame for holding the type-bars.

The latter are radially arranged and supported in such frame in four banks 3^b, 3^c, 3^d, and 3^e, the figure 3 in any form being used for designating the type-bars and their details of construction.

The frame 15 merely rests on the bed-plate 14, the front end of such frame being provided with two lug-pins, which are placed in the two small countersunk bearings 14^a, and the ends of the bars 15′ project a trifle beyond the segment-guiding frame 15^c, and such projecting ends are shaped as indicated in dotted lines in Fig. 4; and when the frame 15 is placed in position the end of such bars 15′ are inserted against the lugs 14^b on the bed-plates 14, (see Fig. 3,) under the plate 14^c, affixed on such lugs and projecting over the same, as seen in Figs. 4 and 5. This construction is intended to provide means for steadily holding the frame 15 on the bed-plate and yet adapt such frame and with it the carriage 16 to be easily removed for substitution by another frame and carriage containing type-bars of different style, as above explained.

Referring now to Fig. 2, it will be observed that all type-bars radially converge toward a common point in a vertical plane, which point may be designated as "printing-point," that is to say, that the ends of the uppermost bank of type-bars 3^b are inclined considerably downward, those of the next following bank 3^c not quite so much, and the bars of banks 3^d and 3^e being, respectively, inclined upward, the lower more so than the upper. The object of such construction is to bring all the type-carrying ends of the type-bars within the same stroke-plane, so that all bars of any of the banks will do their printing or impressing within the same horizontal line on the platen.

In their vertical width all type-bars are of equal dimension. In their horizontal thickness they differ from each other in substantially the proportion in which the respective letters differ from each other, and thus each bar will be of no greater thickness than the character on the printing end thereof may require. By this arrangement the letters and characters may be printed more solidly, narrow and wide letters or characters not all requiring the same space; but the type-bars must be made of sufficient strength to be inflexible and not vibrate laterally when thrown against the platen in printing.

Each of the type-bars is further provided with a lug 3^g (see Fig. 9) and a spring 3^h. The former serves as a means for moving, and also as a stop for such type-bars when returned to their normal place after having been thrown against the platen to make a print or impression, and the spring 3^h brings the top of the type-bar, which has a little notch against the lower edge of the longitudinal segment-bars 15^g of the front bearing or guiding frame 15 to lock the type-bars in place until disengaged by pressing on their finger-piece or key 3^l.

The type-carrying ends 3^j (see Fig. 12) of the type-bars of the same bank are formed and adapted to present a straight printing-face, as shown.

In the normal position, that is to say, while at rest, the type-bars 3 are contained in their supporting-frame in the position seen in Fig. 2, their rear ends resting in the slots 15^h in the vertical segment-plate 15^c and their front ends resting in the spaces or vertical slots occasioned by the crossing of the segment-bars 15^g and the vertical bars 15^f of the guiding-frame 15^b. While in this position the notches in the upper edge of said bars will be locked with the bars 15^g, as before mentioned, the springs 3^h resting on the bars 15^g and supporting and holding said ends of such type-bars in place.

The longitudinal slots 15^h of the guiding-frame 15^c for the rear end of the type-bars are of sufficient length to allow some play and free movement of the type-bars when thrown against the platen, and the springs 15^i automatically keep the said ends of the type-bars together without interfering with their operation.

We may next consider the carriage for conveying and throwing the type-bars 3 against the platen for impressing or printing, and which carriage and its parts I will designate by the numeral 16 and derivatives thereof. Such carriage consists (see Figs. 2, 9, and 10) of two side frames or sections 16^c, each provided with two vertical plates or posts 16^d, between each two pair of which posts are riveted a series of four segment-bars 16^e and 16^f, located one above the other.

The carriage is mounted on suitable friction-wheels 16^g, adapted to travel on the rails 17, mounted on the bed-plate 14, the segment-bars 16^e and 16^f extending longitudinally be-

tween the type-bars 3, as shown in Figs. 2, 9, and 10. The carriage is operated by the two arms 11, which are attached to the rod, of which the treadle 10 is mounted, as above mentioned, and the fork end 12 of which arms 11 grip studs 16^h on each side such carriage, and as the treadle 10 is operated by the foot the carriage is moved forward and back again, the extreme movement thereof being indicated in Figs. 1 and 2 in dotted lines. By means of this carriage the type-bars are thrown against the platen, the operation being as follows:

It will be observed from Fig. 10 that the segment-bar 16^f of the carriage has a shoulder, and that at the rear end of the type-bar is a button or stud 3^k. Thus by pressing on the finger piece or key of any of the type-bars such button or stud 3^k is depressed into engagement with the said shoulder of one of the segment-bars 16^f of the carriage, and by now operating the treadle 10 the arms 11 will propel the carriage forward, and with it the type-bar which has been depressed by striking its key. The type-bar carriage does not quite convey the type-bars up to the platen, but the momentum obtained by the type-bars in their travel completes the work and throws the same against the platen with sufficient force to make a uniform imprint or impression. By then moving the treadle in an opposite direction the arms 11 will move the type-bar carriage back toward its first position, and while so doing the segment-bar under the particular type bar or bars which has been printing will come in engagement with the little lug 3^g under the respective type-bars and return the latter back in their normal position. One or any number of type-bars may be depressed at the same time to impress or imprint either a part or even a whole word at once; and it is immaterial whether such type-bars be all of the same bank or of different banks. There must be some blank or space type-bars to allow several short words to be printed at once.

The platen against which the type-bars are thrown is a roller 18, (see Figs. 1, 7, and 13,) having a covering of rubber or other impressible material, and the ends of the shaft 19 thereof are mounted between two vertical plates 20, which are held together by two rods or braces 21 and 22, extending longitudinally, the upper of which projects a trifle beyond the plates 20, and such projecting points of said bar or brace 21 and two short pivots 23 on the outside of each of said plates 20 provide the means for suspending such platen and its frame in the vertical end plates 24 of its carriage, part of the outline of such plates 24 being shown in dotted lines. (See Fig. 7.) Said plates 24 of the platen-carriage are held together by bars or braces 25, 26, and 27, and such plates are further provided with two circular perforations, through which the bars 28 and 29, constituting the bearings for the platen-carriage, extend horizontally between the two vertical plates 30. The platen-carriage is further provided with a ratchet, and on the right end of the shaft of the plate, which shaft projects somewhat beyond the plate 24 of the platen-carriage, is a ratchet-wheel which cooperates with a pawl 33, pivoted to a lifter or lever 34, as will be seen from Figs. 7 and 8, and such ratchet-wheel and pawl constitute part of the means for turning the platen to raise the paper, metallic sheet, or other material to be imprinted or impressed, so as to write a lower line. The said pawl 33 is pivoted to a knee 34, the loose end of which knee rests on a plate 39, supported pivotally at one edge 38, as shown in Fig. 7, between the end plates 30, and said plate 39 is operated by means of a rod 35, horizontally supported at one side of the bed-plate, and the front end of which rod 35 is pivoted to a bell-crank 36, provided with a button 36^a, and the other end of the rod 35 being pivoted to a rod 37, depending from said plate 39, and thus by depressing the bell-crank 36^a the plate 39 will be lifted, raising the knee 34 and the pawl 33, operating the ratchet-wheel 32, on the platen, by which operation the latter will be turned.

The platen, by reason of being supported only on the pivots 21 and 23, may be removed and substituted by another when necessary. In the operating of my machine the platen travels from right to left, and such traveling is accomplished by the following mechanism: The bar 31 is ratchet-faced on both its upper and lower sides. 40 is a contrivance (see a top view thereof in Figs. 1 and 11 and a front elevation in Fig. 13) adapted to move and automatically adjust itself laterally on two rods 41 and 42, extending horizontally in front of the platen-carriage. Said device 40 is provided with a plate 43, set at a bevel and which constitutes a self-adjustable wall of my funnel-guide 44, which is provided for guiding the type-bars, as will be explained later.

To the back of the contrivance 40 are pivoted two little pawls 45 and 46, (see also Fig. 16,) one a little longer than the other, which cooperate with the upper ratchet-face of the bar 31. The object of having one pawl a little longer than the other is to make one of the same rest between two teeth while the other pawl is engaging one of the teeth of such ratchet-bar, the result being to afford a whole or half space to accommodate either a broad or thin letter. The funnel-shaped type-bar guide 44 is fastened to the bed-plate 14 in front of the platen at a central point between the end plates 30, and consists of a rigid wall 47, the adjustable wall 43, (a part of the contrivance 40,) the floor-plate 48, and the roof or hood 49, the said four sides 47, 48, 49, and 43 of such funnel-guide all converging toward some central point, as shown in Figs. 1 and 2. As a type-bar is thrown toward the platen the adjustable wall-plate of said funnel-guide 43 will be pushed aside, as shown in Fig. 13, to make room for the type-bar in its passage to the surface of the platen.

In so doing the contrivance 40 is moved either a half or whole space to the right, according to the thickness of the type-bars or type-bar making the impression, the pawl-lever 70 being engaged by the toe or bar 71 as the platen moves toward the left to stop the latter from traveling too far. Upon the type-bars now being withdrawn or returned by their carriage to their normal position the coil-spring 50 will move the contrivance 40, and with it the plate 43, back to its normal position, as seen in Fig. 1, and in so doing either one of the pawls 45 or 46 will engage the ratchet-bar 31 and move the platen-carriage either a whole or a half space to the left in proportion to the space occupied by the type bar or bars which have just before made an imprint.

The lever 7 is provided for laterally shifting the position of the platen, the same being pivoted to the bed-plate 14 at 7^a. 7^b is a short lever pivoted at 7^c to the lever 7. 7^d is a bar pivoted to the bed-plate 14 at 7^e, and 7^f is a coil-spring engaging the upper end of the bar 7^d and drawing the same toward the right. Upon pressing the ends of the lever 7 and 7^b together this will cause a lug 7^g on the end of the lever 7^b to be brought in contact with the bar 7^d and move the same to the left, and with it the right-angle rod 51, pivotally supported on two rods 52 and 53, (see Fig. 13,) and this operation will bring a finger 54, attached to the angle-rod 51, under the pawls 45 and 46, lift the same off the ratchet-bar, and the platen-carriage is then free to be laterally adjusted in any desired position, the scale 55, Fig. 1, assisting such lateral adjustment of the platen, and another scale may be provided in front of the platen, as in type-writers, so that by adjusting the pointer 56 in position on the scale 55 the position of the platen may be exactly adjusted.

After printing on one line to the end thereof, and the platen is moved back to its starting-point on the right, a toe 72, Fig. 13, engages the plate 39, on which rests the knee 34, and lifts such plate 39, causing the pawl 33 to engage the ratchet-wheel 32 on the platen and to turn the latter and the sheet thereon to print a lower line.

In Fig. 6 I show the mechanism for moving the platen-carriage a single space, and consists of a vertical spring-pawl 66, (see also Fig. 2,) a segment ratchet-bar 67, rigidly attached to the front end of the lever 7 and adapted by friction-wheels 68 or otherwise to travel on a plate 69, affixed to the front end of the bed plate or frame 14; and by depressing the button of said vertical spring-pawl 66 the platen-carriage, through the agency of the lever 7, may be moved one or more spaces to the left.

The printing ends of the type-bars may be provided with upper and lower case letters, in which case it would be necessary to have means for lifting the platen. To provide therefor, the end plates 30 are furnished with ears 57, Figs. 1, 2, and 13, inserted on rods 58, supported on a cross-bar 60, attached to the bed-plate 14; and the plates 30 may be lifted to raise the platen for printing a lower or upper case letter by operating a crank-handle 61, (see Fig. 1,) moving a pair of crank-arms 62 on the rod 63, operating the rods 59, and with these the toggle-joints 64.

65 shows a ribbon for inking the type in case one desires to make an imprint on paper only. Means must also be provided for moving the ribbon, but as such ribbon is not a material part of my invention and suitable mechanism to accomplish such moving of the ribbon being already known and in use on type-writers I do not deem it necessary to illustrate or describe the same.

The keys or finger-pieces of the type-bars will of course be provided with the facsimile of the letter or character on the printing end of the type-bar.

Having thus described my invention, now what I claim, and desire to secure by Letters Patent, is—

1. In combination, the platen, the horizontally-arranged type-bars having depressible ends provided with finger-pieces, the reciprocating carriage, means whereby the depression of the type-bars through their finger-pieces will cause them to be engaged by said reciprocating carriage, and means for operating the carriage to project the type-bars against the platen, substantially as described.

2. In combination, the platen, the guiding-frames, having horizontally-positioned slots, the series of reciprocating type-bars passing through said slots and converging normally toward the same point upon the platen, and the springs bearing against the outer bar of each series for holding said bars normally together, but permitting lateral movement of the same while being thrown forward, substantially as described.

3. In combination, the platen, the guiding-frames provided with horizontally-positioned slots, the rows of type-bars when operated longitudinally and laterally movable in said slots and converging normally toward the same point, the reciprocating carriage, means for connecting the type-bars with the carriage, and the springs for holding said type-bars normally against lateral movement, substantially as described.

4. In combination the platen, the longitudinally-movable type-bars having depressible ends and downwardly-extending projections, the reciprocating carriage located beneath said bars, the treadle for reciprocating the carriage, bars 16^f carried by the carriage and adapted to engage the type-bars as they are depressed and project the same against the platen, and bars 16^e also carried by the carriage and arranged to return the operated type-bars, substantially as described.

5. In combination, the platen, the longitudinally-movable type-bars having downwardly-extending projections and depressible

finger-pieces, the reciprocating carriage having bars extending transversely beneath said type-bars and adapted to engage said projections when the finger-pieces are depressed, and means whereby the return of the carriage after printing returns the operated bars to normal position, substantially as described.

6. In combination, the stand, the bed-plate mounted thereon, the rack 15 having the vertical segment-guiding frames 15^b and 15^c, the type-bars carried by said frames and radially-arranged therein, the reciprocating carriage, the platen, and means for connecting the bars with the carriage, substantially as described.

7. In combination, the stand, the bed-plate thereon, the rack 15 having a horizontally-slotted segment, guiding-frames 15^b and 15^c, the type-bars mounted in rows in the slots of said frames and having depressible key ends, the platen, the reciprocating carriage and bars carried by the carriage and extending beneath the rows of bars whereby the depression of any key end will cause the bars of the carriage to engage with and operate the type-bars and the treadle for operating said carriage, substantially as described.

8. The combination in a type-writing or type-setting machine with the reciprocating type-bars, radially arranged, the supporting-frame therefor, the means for operating the same, and the platen, of the fixed contrivance 44, the laterally-movable contrivance 40 mounted on rods 41 and 42 and provided with wall 43 constituting part of said device 44, the ratchet-faced bar 31, the pawls 45 and 46 coöperating with said bar 31, and connections from said device 40 to the platen whereby the latter is fed forward a distance corresponding to the lateral movement of the device 40 in being pushed aside by the type-bars projecting against the platen, substantially as described.

9. In combination, the stand, the bed-plate, the rack 15 having horizontally-slotted guiding-frames, the type-bars mounted therein and having depressible key ends, the platen, the carriage reciprocating toward and from the platen, a bar or bars 16^f on the carriage for engaging the type-bars when depressed to project them against the platen, and the treadle for operating the carriage and a bar or bars 16^e for returning the operated type-bars to normal position, substantially as described.

10. In a type-writing machine of the class referred to, the combination of a supporting-frame 15 removably supported on the bed-plate or frame of the machine, and containing a series of loose type-bars, horizontally supported in one or more banks; means for locking the type-bars in place until operated; a carriage as 16 having segment-bars as 16^e and 16^f disposed and adapted to freely move underneath and to coöperate with the type-bars, and means for operating the said carriage so that the same may be moved toward and from the platen, and while so moving throw the type-bars toward such platen and return the same again to their normal position in their said supporting-frame, substantially as described.

11. In combination, the stand, the bed-plate thereon having a suitable track for a reciprocating carriage, the type-bars and their supporting-frame removably mounted upon the said stand and having a reciprocating carriage arranged to run upon said track and to reciprocate the type-bars, and the treadle on the stand having connections which automatically engage said carriage when the frame is placed upon the stand, substantially as described.

12. In a type-writing and type-setting machine, the combination with the horizontally-reciprocating type-bars and platen, of means for shifting the platen in either direction, said means including a main pivoted lever having its rear end connected with the platen-carriage and its forward end in proximity to the keyboard, a bar having one end pivoted to the frame and its other end in connection with the platen-carriage-holding device, and a supplemental lever pivotally connected to the main lever and arranged to act upon the pivoted bar and to release the platen-carriage, substantially as described.

13. In combination, the platen, and platen-carriage the pivoted lever having its rear end connected with the carriage, and its forward end located in reach of the operator, the quadrant-scale over which said forward end travels, the platen-carriage retaining and releasing mechanism, the bar pivoted in the machine-frame and having connections with said mechanism, the supplemental lever pivotally connected to said pivoted lever and a stud on the rear end of the pivoted lever arranged to contact with the said bar when the main and supplemental levers are pressed together whereby the carriage is released, substantially as described.

A. MATTESON.

In presence of—
JOHN SHAVER,
JOHN OGILBEE.