

(No Model.)

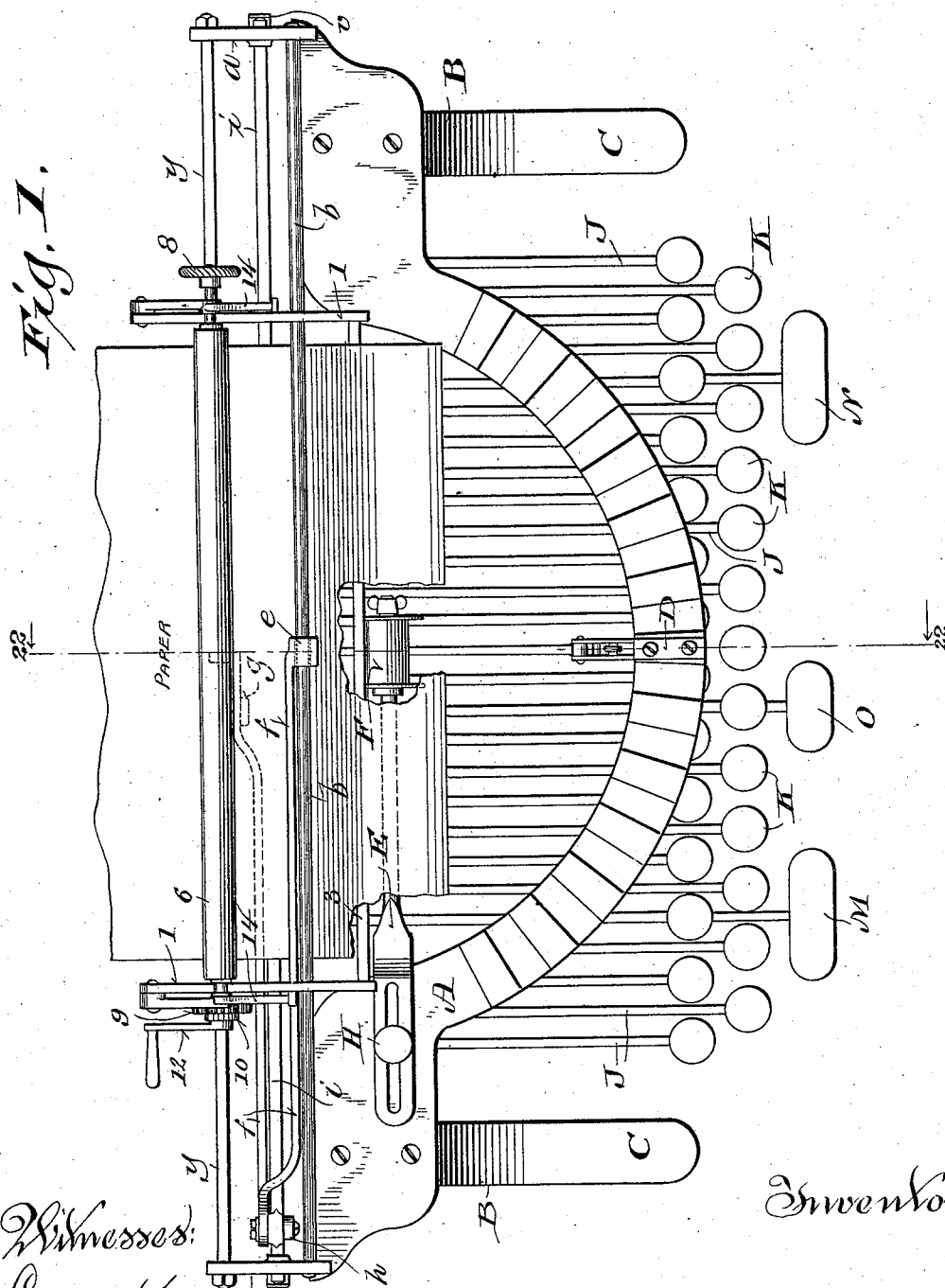
3 Sheets—Sheet 1.

C. S. NICKERSON.
TYPE WRITING MACHINE.

No. 576,146.

Patented Feb. 2, 1897.

Fig. 1.



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Inventor:

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(No Model.)

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Fig. 3.

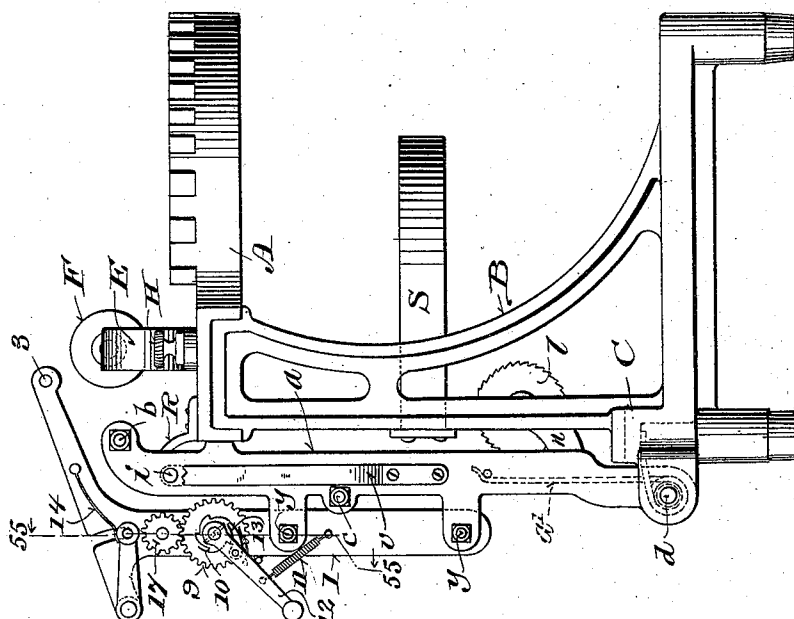
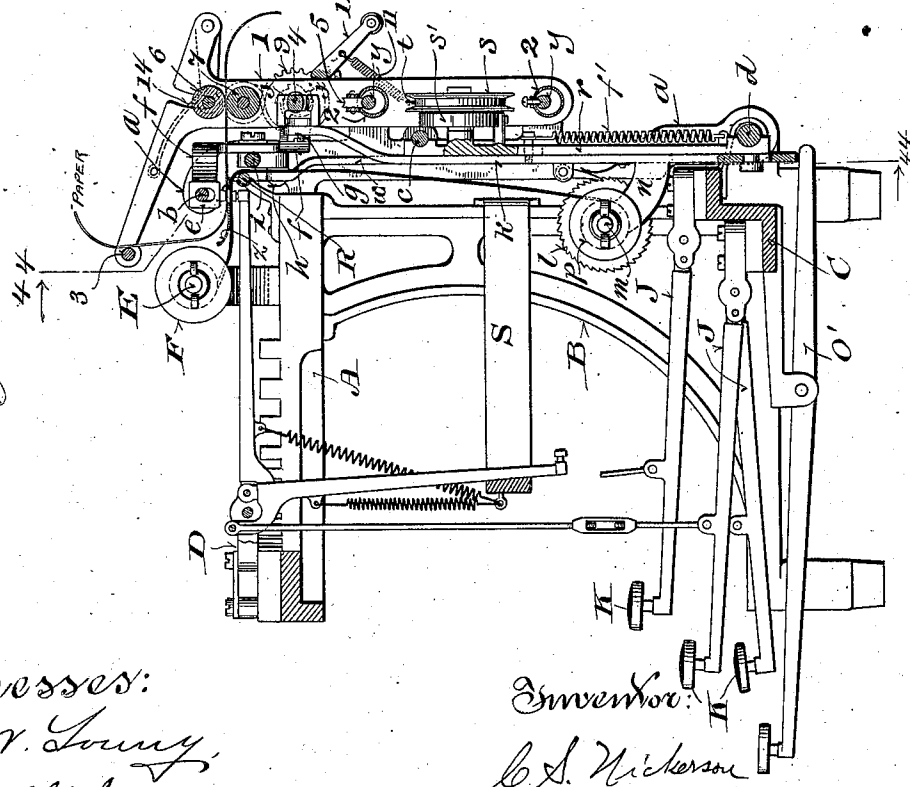


Fig. 2.



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3 Sheets—Sheet 3.

No. 576,146.

Patented Feb. 2, 1897.

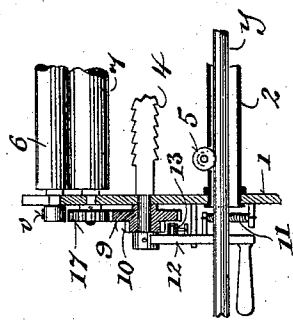
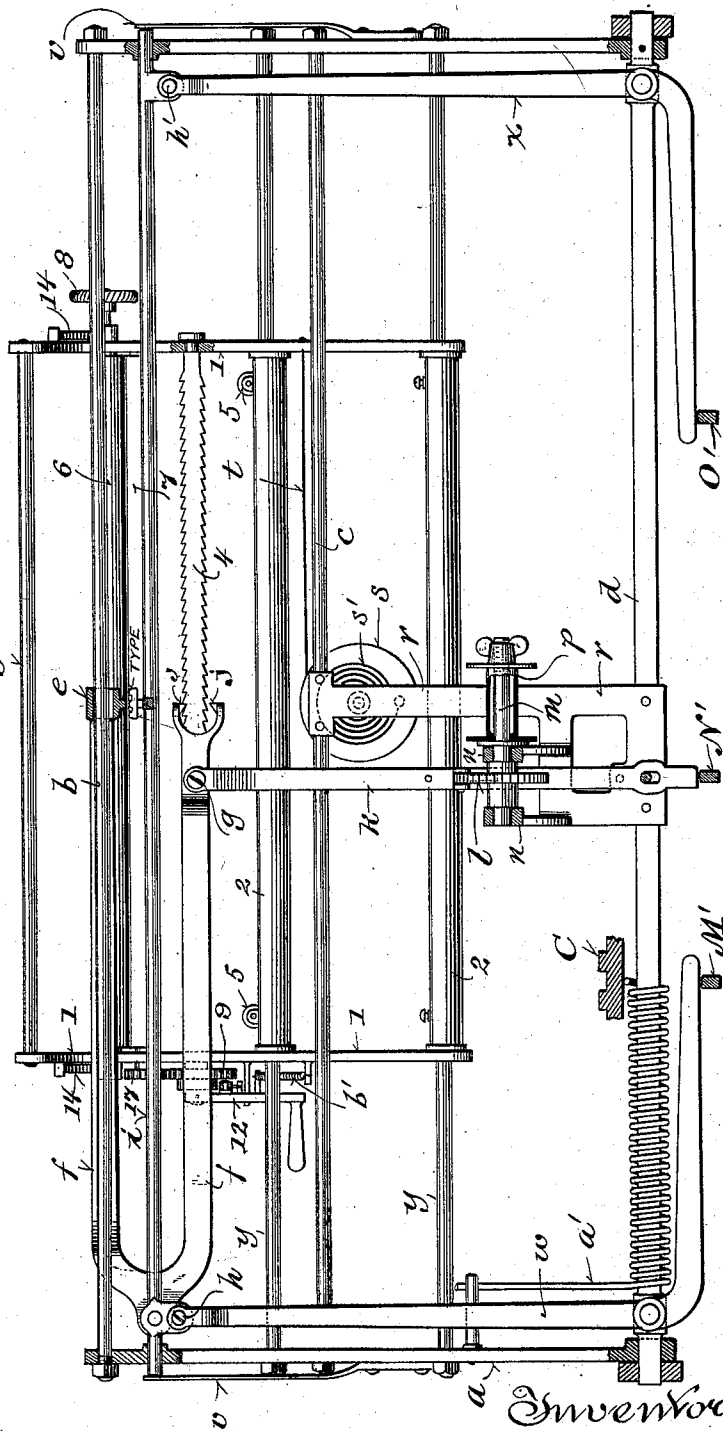


Fig. 5.

Fig. 4.



Witnesses:
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UNITED STATES PATENT OFFICE.

CHARLES S. NICKERSON, OF RACINE, WISCONSIN.

TYPE-WRITING MACHINE.

SPECIFICATION forming part of Letters Patent No. 576,146, dated February 2, 1897.

Application filed July 17, 1895. Serial No. 556,215. (No model.)

To all whom it may concern:

Be it known that I, CHARLES S. NICKERSON, a citizen of the United States, residing at Racine, in the county of Racine and State of Wisconsin, have invented a new and useful Type-Writing Machine, of which the following is a specification.

My invention relates to improvements in type-writing machines of the "half-basket" pattern, so called, in which a number of type-levers hinged at their outer extremities in a segment of a circle and each carrying type on which more than one character is engraved swing upward to a common printing-point; and the objects of my invention are, first, to secure a simple and efficient mechanism for producing capital letters, figures, punctuation-marks, &c., without multiplying type-levers; second, to provide a simple letter-spacing and ribbon-moving device by which the impact of the type in printing a letter or other character produces the letter-space and the necessary movement of the inking-ribbon; third, to provide for the easy and rapid examination of the writing at any time without disturbing the position of the paper-carriage upon its ways.

The first of these objects I secure by making the type strike not against a roller, as in most machines of this pattern, but against an anvil having a face equal to the length and breadth of the largest letter or other character to be printed. This anvil is movable and can be shifted at will, so as to present its face to any character upon the type.

The second object I secure by making this anvil movable also in a vertical direction for a short distance, and when so moved by the impact of the type at the moment of printing it operates the escapement of the paper-carriage and also moves the inking-ribbon.

The third object I secure by making the paper-carriage move, not upon the main frame of the machine, but upon an auxiliary frame hinged to the rear of the main frame. This auxiliary frame is held in an upright position by a spring and can be tilted backward for examining the writing, carrying with it the paper-carriage and all its attendant mechanism without disturbing the position of the paper-carriage upon its bearings.

The details of the entire mechanism are

set forth in the accompanying drawings, in which—

Figure 1 is a top view of the entire machine. To avoid complicating the drawing, only one type-bar hanger D is shown in position. The type-bars, with their connections, differ in no respect from those in common use in machines of this class. The nest S, against which the type-bars lie when at rest, is also omitted in Fig. 1. Fig. 2 is a vertical section through the center of the machine from front to back along the line 22 22 in Fig. 1. Two type-bars are shown, one at rest and the other raised to strike. The section is represented as viewed from the right-hand side. Fig. 3 is a left-hand view of the entire machine, showing the position of the auxiliary frame, the line-spacing mechanism, and the ribbon-spools. No finger-keys or type-bars are shown. Fig. 4 is a front view of the auxiliary frame along the sectional line 44 44 in Fig. 2. Fig. 5 is a partly-sectional view of the left end of the paper-carriage, showing in detail the line-spacing mechanism, along the line 55 55 in Fig. 3.

Similar letters and numerals refer to similar parts throughout the several views, capital letters referring to the main frame and all attached parts, small letters designating the auxiliary frame and its parts, and numerals designating the several parts of the paper-carriage.

The main frame consists of the top plate A, the two standards or side plates B B, and the bottom plate C. To the top plate A are attached the type-bar hangers D, the spindle of the upper ribbon-spool E, and the supports of the ribbon guide-rod R. (Shown in Figs. 2 and 3.) To the standards B B is attached the nest S, Figs. 2 and 3, and to the bottom plate C are attached the bearings of the key-levers J J, the bearings of the shift-keys M O, the bearings of the space-key N, the bearings in which the auxiliary frame turns upon the rod d, Fig. 4, and the feet upon which the machine stands.

In the machine represented there are twenty-seven type-bars, each moved by its own finger-key and each carrying a type upon which three characters are engraved side by side and about one-eighth of an inch apart. The middle character is generally a small let-

ter, the one at its left the corresponding capital, and the one at its right a figure or punctuation-point.

Each alternate type-bar is hung one-fourth of an inch higher than its immediate neighbors to avoid interference of the type in the nest. In the machine shown this is accomplished by fastening the type-bar hangers to alternate elevations and depressions in the top plate A.

The left end of the spindle E, upon which the upper ribbon-spool F revolves, is flattened and slotted, as shown, and clamped to the top plate A by the milled screw H. This gives the ribbon a transverse motion of about its own width. The ribbon-spool F revolves freely upon the spindle E and is held by a thumb-screw, as shown.

The auxiliary frame (shown in its vertical position in Fig. 3 and in detail in Fig. 4) consists of the end plates *a a* and the binding-rods *b c d*. The ends of *d* project beyond the end plates *a a* and form the bearings on which the auxiliary frame tilts backward when the writing is to be examined. A coiled spring *a'* holds the auxiliary frame upright, the upper parts of the end plates *a a* resting against the top plate A.

The upper connecting-rod *b* runs through a slot in the anvil *e*. This slot allows the anvil *e* to be moved along the rod *b*, and also allows the anvil a vertical motion of about one-tenth of an inch. The anvil *e* is attached to a forked lever *f*, which is pivoted at *h* to the sliding rod *i*. The lower end of the forked lever *f* bears two pallets *j j*, which embrace the double rack 4 of the paper-carriage. This rack has teeth on both the upper and lower edges sloping in the same direction, and the pallets are so placed as to form the escapement for letter-spacing.

To the forked lever *f* is attached at *g* the sliding lever *k*. This lever *k* bears a pawl (shown in Fig. 2) engaging at its downward stroke the teeth of the ratchet-wheel *l*, which revolves the lower ribbon-spool *p*. The lever *k* is extended downward until it reaches the lever *N'* of the spacing-key N. The lower ribbon-spool *p* is clamped tightly upon the spindle *m*, which runs in the bearings *n n* and bears the ratchet-wheel *l*. The spool *p* may be moved longitudinally upon the spindle *m* about the width of the ribbon.

A spring *f'*, Fig. 2, keeps the lever *k*, the forked lever *f*, and the anvil *e* depressed.

To the binding-rods *c* and *d* is fastened the plate *r*. This plate *r* carries on its front side the bearings *n n* of the spindle *m* and on its reverse side the wheel *s*. This wheel *s* is revolved by the coiled spring *s'* and upon its grooved face carries the cord *t*, which draws the paper-carriage to the left.

The sliding rod *i* has a longitudinal motion of about one-eighth of an inch in both directions. As this sliding rod *i* carries the forked lever *f*, its motion must carry with it both the anvil *e* and the pallets *j j*, and since one of

these pallets always engages a tooth of the rack 4 the longitudinal motion of the rod *i* in either direction will carry with it the paper-carriage and all its parts. The sliding rod *i* is held in a central position by the two springs *v v*. The right-hand spring *v* is not absolutely necessary, since the spring *s'* keeps the paper-carriage and the sliding rod *i* held continually to the left. The right-hand spring *v* is inserted only to secure a prompt return of all the parts in very rapid writing.

The sliding rod *i* is moved by the levers *w* and *x*. The lever *w*, which is pivoted upon the binding-rod *d*, is attached to *i* at *h* and when moved by the shift-key lever *M'* will push the sliding rod *i* to the right. The ends of the levers *M'*, *N'*, and *O'*, which correspond to the keys M, N, and O, are shown in section in Fig. 4.

The paper-carriage consists of the end plates 1 1, Figs. 3, 4, and 5, the hollow binding-rods 2 2, and the upper binding-rod 3, which also acts as a paper-guide. I prefer to make the main binding-rods 2 2 of steel pipe, as shown, for lightness and strength and to place the rails *y y*, upon which the paper-carriage moves, within them. The weight of the carriage rests upon two wheels 5 5, running upon the upper rail *y*. By means of screws in the lower hollow rod 2, acting against the lower rail *y*, the paper-carriage is adjusted to run without lateral motion.

The paper (shown in Figs. 1 and 2) is carried between two small rubber-covered rollers 6 7. The upper roller 6 is held down upon by the springs 14 14 and is revolved by the milled head 8. The lower roller 7 bears at its left end the gear-wheel 17, the teeth of which engage with those of the gear-wheel 9, which revolves freely upon the rack 4. To this gear-wheel 9 is fixed the ratchet-wheel 10. The rack 4 revolves in the end plates 1 1. To the left end of the rack 4 is fixed the lever 12, bearing a pawl 13, which engages in the teeth of the ratchet-wheel 10. The lever 12 is depressed by the spring 11. By raising the lever 12 the rack 4 is revolved about one-fourth of a revolution, disengaging its teeth from the pallets *j j*, so that the paper-carriage may be moved freely in either direction. On releasing the lever 12 it is depressed by the spring 11, revolving 9 and 17, thus forcing the paper forward between the rollers 6 and 7 to make the line-space. The lever 12 being depressed to its normal position, the teeth on the rack 4 again engage the pallets *j j*.

To the sliding rod *i*, at its middle, is attached a small shield of thin flexible metal *z*, Fig. 2, with a slot through it the width of a letter. This shield prevents the ribbon soiling the paper, and also shows the exact position of the next letter to be printed, when the auxiliary frame is tilted backward to examine the writing. It moves with the sliding rod *i* and always presents the slot to the face of the anvil *e*.

Operation: To introduce the paper, the

edge of the paper is placed between the rollers 6 7, and the roller 6 is revolved by the milled head 8. The paper runs under the anvil *e*, between the inking-ribbon and the shield *z*, behind the guide-rod 3, and should have a sheet of blotting-paper behind it.

To print a small letter, the sliding rod *i* is so adjusted that the anvil *e* faces the middle character on each type as it is raised to strike. This middle character is usually a small letter. Depressing any finger-key *K* raises its corresponding type-bar and causes the type to strike the ribbon and paper up against the anvil *e*. The impact of the type raises the anvil *e* as far as it will go. Through the forked lever *f* this releases the upper pallet *j* from the tooth in the rack 4. The paper-carriage moves to the left, the spring *f'* depresses the lever *f* with the pallets *j, j*, and the paper-carriage moves the remainder of a full letter-space.

To make a space between words, depressing the space-key *N* lifts its lever *N'*, which acts upon the sliding lever *k* and the forked lever *f*, operating the pallets *j, j*, as described above.

To print a capital letter, the capital-shift key *O* is so placed that it is under the thumbs of the operator when his fingers are over the letter-keys *K K*. The key *O* may be depressed by the thumb at the same time any letter-key *K* is depressed. The rear end of the key-lever *O'*, acting upon the lever *x*, pushes the sliding rod *i* to the right, presenting the face of the anvil *e* to the right-hand character upon the type, (*i. e.*, the left-hand character, the type being upside down.) At the same time the pallets *j, j* carry the paper-carriage also to the right, presenting the proper space on the paper to the left-hand character upon the type, which, as already stated, is a capital letter.

To print a figure or punctuation-point, depressing the key *M* in a similar manner through the lever *w* pushes the sliding rod *i* to the left. As the printing of a figure or punctuation-point ordinarily requires the use of both hands and the printing of a capital letter requires only one hand there is no danger, as in other machines using two shift-keys, of confusing the two.

To release the paper-carriage without moving the paper through the rollers, raise the lever 12 through a little less than one-fifth of a revolution. The pawl 13 does not then engage with the wheel 10.

To change the inking-ribbon when it is all wound upon the lower spool, both spools are removed and shifted each to the other spindle.

I am aware that previous to my invention type-writing machines have been made with converging type-levers of various forms and that shifting devices have been applied to such machines to secure the printing of more than one character from each type-lever. I therefore do not claim the combination herein described in all its parts; but

What I do claim as my invention, and desire to secure by Letters Patent, is—

1. In a type-writing machine, the combination, with converging type-levers each carrying type upon which more than one character is engraved, of a laterally-movable anvil against which the type strike, having a face about the length and breadth of the largest character to be printed, capable of being shifted so as to present its face to any character upon the type, in the manner, and for the purposes substantially as described.

2. In a type-writing machine, the combination of the vertically-movable anvil *e*, actuated by the impact of the type upon its face, with the forked lever *f*, hinged to the sliding rod *i*, held down by the spring *f'*, and having upon its lower extremity the pallets *j, j*, which engage the teeth of rack 4 of the paper-carriage, in the manner and for the purposes substantially as described.

3. In a type-writing machine the combination of the type-bars and their operating devices, with the anvil *e*, the vertically-oscillatory forked lever supporting said anvil, the retracting-spring *f'*, the vertically-sliding lever *k* connected to the forked lever *f* and provided with an operating-pawl, and a spindle *m*, carrying a ribbon-spool and provided with wheel *l* adapted to be engaged by the pawl on the lever *k*, all substantially as described.

4. The combination of the space-key, the sliding lever *k*, provided with a pawl, the ribbon-spindle having a ratchet-wheel adapted to be engaged by said pawl, the lever *f* carrying the escapement-dogs, and the carriage provided with the feed-rack, the space-key being adapted to operate to feed the carriage and rotate the ribbon-spool without operating the printing mechanism, all substantially as described.

5. In a type-writing machine the combination of the sliding rod *i*, carrying the forked lever *f* and the ribbon-shield *z*, held in a central position by the springs *v, v*, with the levers *w* and *x*, space-keys *M* and *O* to operate said levers to move the sliding rod *i*, longitudinally in either direction, in the manner and for the purposes substantially as described.

6. In a type-writing machine, the combination with a laterally-movable anvil of a ribbon-shield having a slot opposite the face of the anvil, designed to be shifted laterally along with the anvil, substantially as described.

7. In a type-writing machine the combination with the revolving rack 4 of the lever 12, the ratchet 10, the pawl 13, the spring 11, and the wheels 9, 17, designed by the revolution of the rack 4, to release the teeth of said rack from the pallets *j, j*, and to produce the line-spacing, substantially as described.

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Witnesses:

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