

H. & F. ANDERSON.  
Type-Writing Machine.

No. 210,739.

Patented Dec. 10, 1878.

Fig. 1.

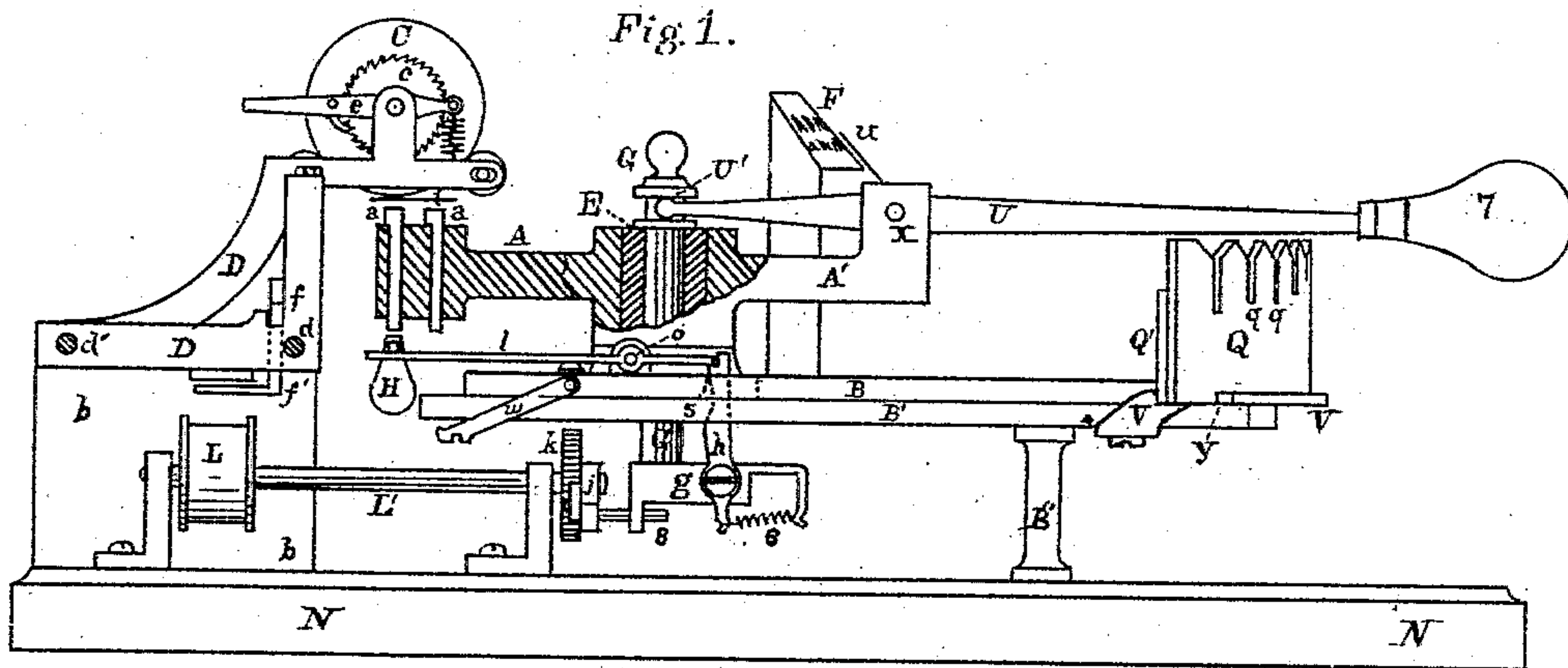
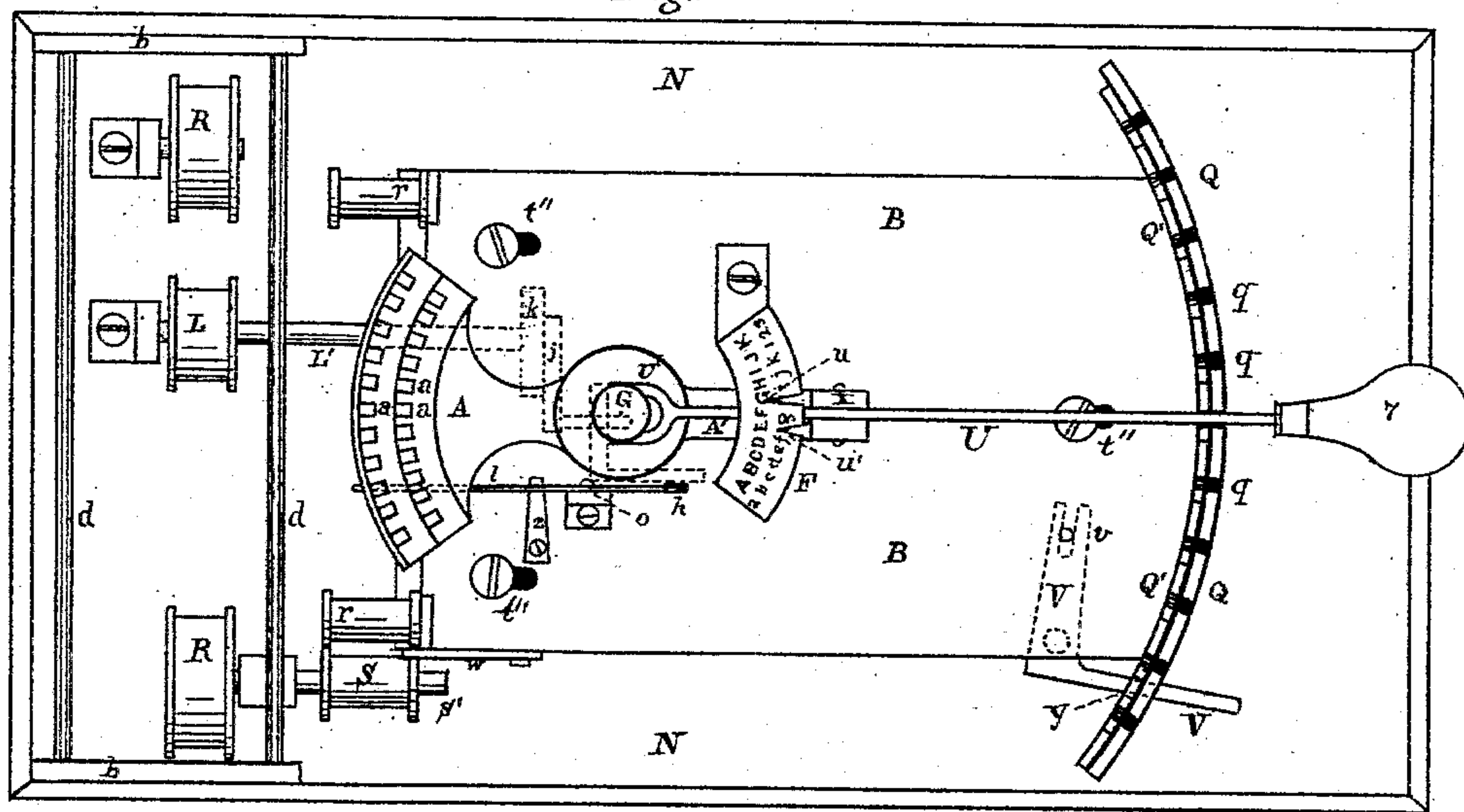


Fig. 2.



WITNESSES

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John D. Sherman

INVENTORS

Homer Anderson  
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Fig. 3.

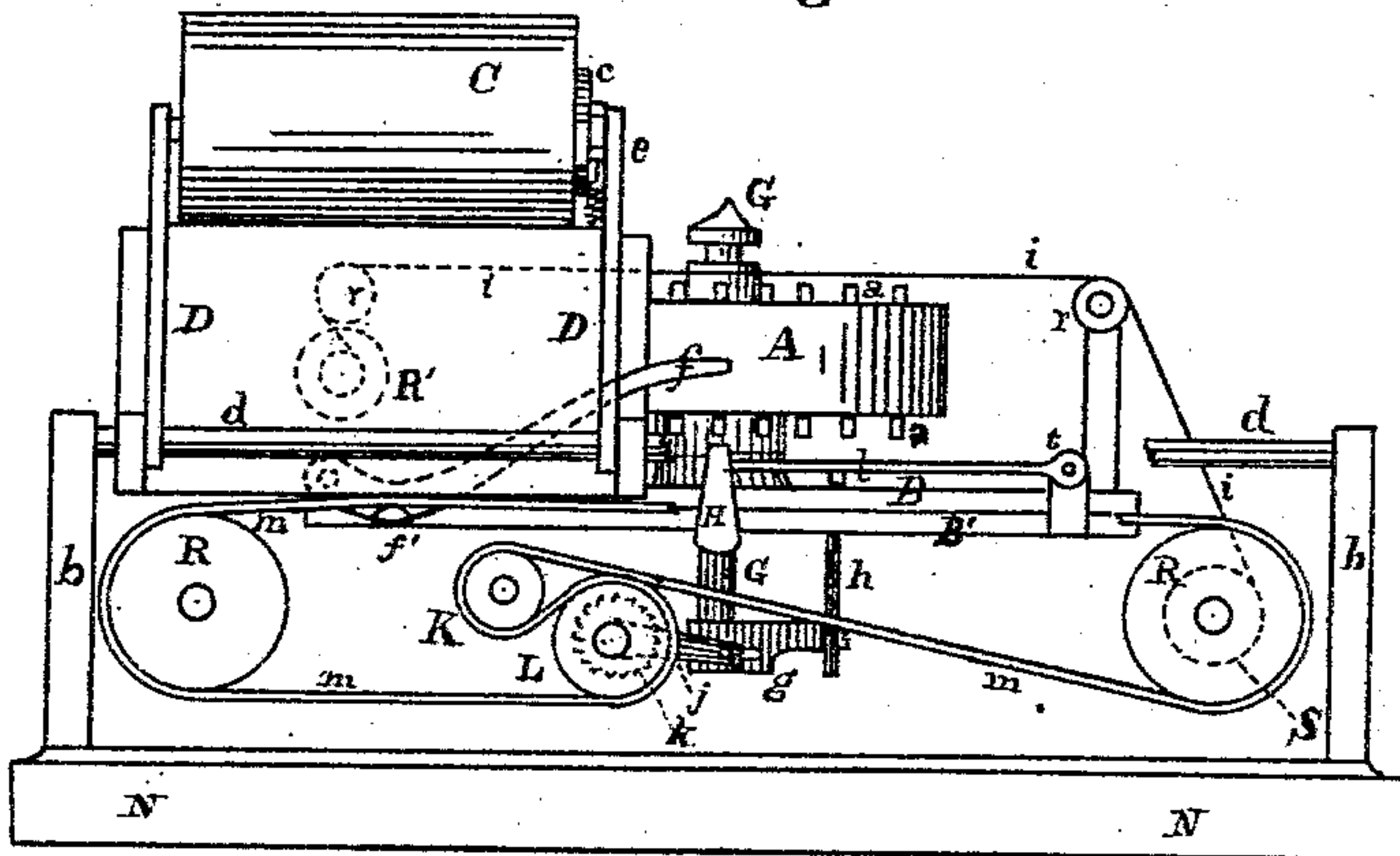
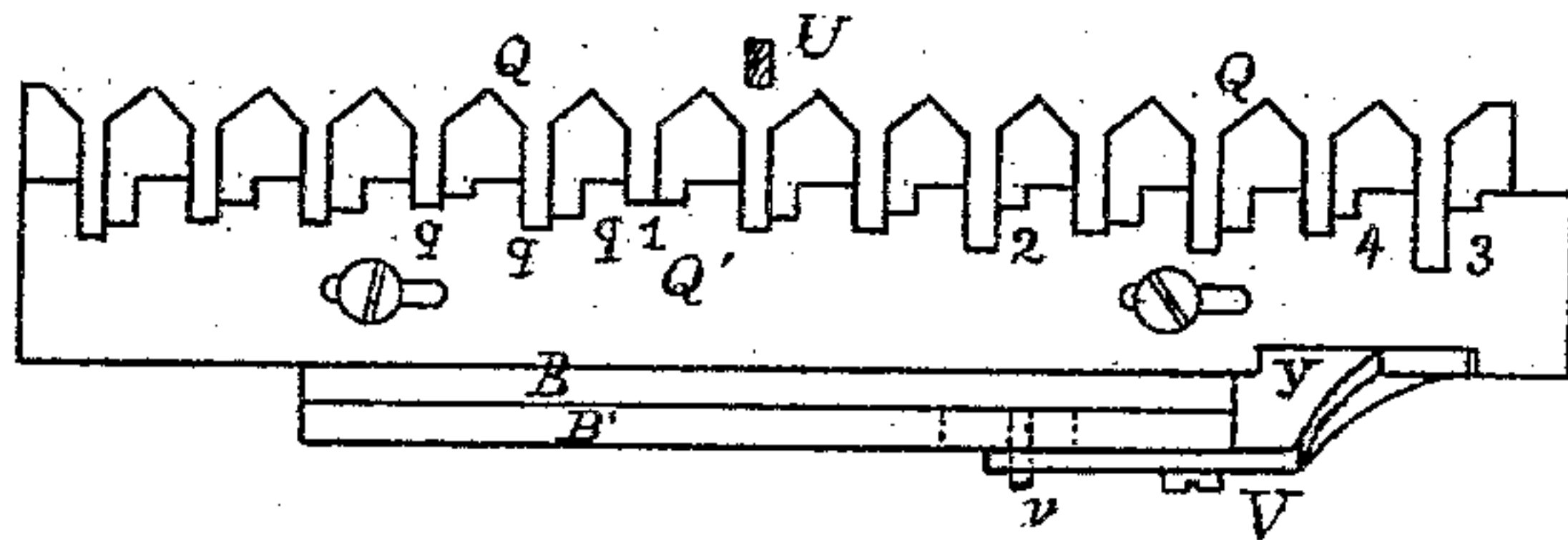


Fig. 4.



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# UNITED STATES PATENT OFFICE.

HOMER ANDERSON AND FRANK ANDERSON, OF PEEKSKILL, NEW YORK.

## IMPROVEMENT IN TYPE-WRITING MACHINES.

Specification forming part of Letters Patent No. **210,739**, dated December 10, 1878; application filed January 15, 1875.

*To all whom it may concern:*

Be it known that we, HOMER ANDERSON, of Peekskill, in the county of Westchester and State of New York, and FRANK ANDERSON, of the same place, have invented an Improved Type-Writer, of which the following is a specification:

This invention relates to that class of machines known as "type-writers;" and consists of an oscillating type-carrier carrying one, two, or more sets of detachable type, a hammer for throwing the type against the paper, a paper-carrier and devices for moving it, and index and lever for operating the machine; and its object is to make it possible and convenient to change the style of type at pleasure, or to renew them when worn out, and to make more accurate and uniform printing than is possible on machines heretofore used, and to have the writing consist, when desired, of capital and "lower-case" letters, as in ordinary printing, and also to produce manifold printing.

Referring to the accompanying drawings, Figure 1, Sheet 1, is a partly-sectional side elevation of a machine embodying our invention. Fig. 2 is a plan of Fig. 1 with the paper-carriage C D removed. Fig. 3, Sheet 2, is an elevation of the end of Fig. 1 that is at the left hand. Fig. 4 is an elevation of the side of the segmental guide-plate Q that is toward the right in Figs. 1 and 2.

In the drawing, B B', Figs. 1 and 2, are two plates fitted together so that one may slide upon the other. The lower one, B', is permanently fixed to the base N by the legs B''.

Attached to or forming part of the upper plate, B, is the upright stud E. To this stud is fitted the piece A, which, at one side, is formed into a segment, A, Fig. 2, while the other side is extended into the arm A'.

Near the circumference of the segment A are two rows of vertical slots or grooves for containing the type *a a a*, Figs. 1, 2, and 3. The grooves are of such a size as just to allow of a free vertical movement of the type, which are kept from falling through by shoulders, as shown in Fig. 1.

The projecting arm A' affords a fulcrum for the lever U, which passes through a slot in the vertical part of A', and works on a pivot, X. The short end, U, of the lever is forked, as

shown in Fig. 2, and enters a groove in the upper end of the stem G. The stud E is bored out to receive this stem, Fig. 1, which passes through to the under side of the plates B B'. When the lever U is vibrated a vertical movement is imparted to the stem G, and through it motion is transmitted to the type-hammer and paper-carriage.

C, Figs. 1 and 3, is a roller, about which the paper to be printed upon passes, and against which the type are thrown to make the impression. This roller is carried in a frame, D D, Figs. 1 and 3, which slides on the two rods *d d*, which are supported by the two uprights *b b* on the base N of the machine. The carriage D D is made in two parts, one hinged to the other at *d'*, Fig. 1, so that the part carrying the roller C may be turned up for inspecting the writing.

The center of the roller C is placed directly over one of the rows of type, so that the latter may have a fair surface to strike upon. The ink-ribbon *i*, Figs. 1 and 3, passes between the type and roller C.

H is a small hammer, pivoted at *t*, Fig. 3, and capable of moving in a vertical direction and striking the lower end of one of the types *a*. This hammer is actuated by the lever *l*, which is pivoted at *o*. One end of this lever passes under the stem of the hammer, as shown in Figs. 1 and 3. *z* is a spring that tends to keep the lever *l* in a horizontal position. *g*, Figs. 1 and 3, is a piece rigidly attached to the stem G. Pivoted to *g* is a pawl, *h*, that passes up through holes in the plates B' B and engages with the lever *l*; but a projection, 5, on its side strikes the side of the plate B, and trips or disengages it before it moves very far. The spring 6 causes the pawl to engage with the lever *l* again, when it returns to its original position.

L R R, Figs. 2 and 3, are three rollers that carry a belt of leather, or it may be of metal or chain. The belt passes over the two rollers R R, one at each side of the machine, and partly around the third roller, L, the latter imparting motion to the belt. The pulley or roller K, Fig. 3, is added to make the belt hug more of the driving-pulley L. The latter is secured to the outer end of the shaft L', which receives at the other end, under the machine,



the ratchet-wheel *k*. A pawl pivoted on the lever *j*, which swings on the same shaft, engages with the ratchet-wheel. The lever *j* is actuated by a pin, *s*, fixed to the lever and passing through a slot in the piece *g*, which is attached to the stem *G*, Figs. 1, 2, and 3. This belt *m* is for communicating motion to the paper-carrier *D D C*; and to effect this part of the under side of the paper-carriage is made to nearly coincide with the upper part of the belt, and the lever *f f'*, Fig. 3, operates as a clamp at *f'*, and connects the carriage to the belt, so that when the belt moves the carriage must also move. The carriage may be disconnected at any time by depressing the outer end of the lever *f*.

Our object in using this kind of a device for moving the paper-carriage is that it may be moved to any and unequal distances to correspond to the different spaces occupied by the various letters of the alphabet, and thus make much neater-looking writing or printing than is possible where the ordinary rack and escapement are used, which necessitates a regular and uniform distance or space for each letter, whether it be long, as the letter *m*, or short, as the letter *i* or *l*.

The ink-ribbon is shown in Fig. 3. It passes over the little rollers *r r*, that serve to keep it in position over the type, thence down on the right hand to the spool *S*, and on the left to the spool *R'*. The spool *S* is made to slip onto the end of the shaft *S'*, and is so made that it will have to turn with the shaft, which has secured to its other end the roller *R*, around which the belt *m* passes; so it will be seen that as the belt moves the ribbon is wound upon the spool *S*. The spools *S* and *R'* are made interchangeable as to their positions, and when the ribbon is all wound upon one their position is reversed, and it is then wound off on the other; and thus there is constantly exposed to the action of the type a fresh part of the ribbon. *Q* is a segment of the same arc as the segment *A*, secured to the upper plate, *B*, and having in it vertical slots that correspond in number and relative position with the type in one of the rows in the segment *A*, Fig. 4. These slots are made to just receive the lever *U* when it is depressed by the handle *7*.

The lever *U*, slots in *Q*, type *a a a*, and hammer *H* are so related in their positions to each other that when the lever is pushed down into one of the slots one of the type will be directly over the hammer, and, as the lever *U* engages with the stem *G*, while the former is going down the stem rises and causes the hammer, through the connections *h* and *l*, to strike the type and throw it against the ink-ribbon and paper about the roller *C*; and also, while the lever *U* is going down the lever and pawl *j* are being raised to take an advanced hold on the ratchet-wheel *k*, and as the lever *U* begins to return (the printing being done while on its downward movement) the wheel *k* is carried partly around, and causes the belt *m*, and con-

sequently the carriage *D*, to move forward a distance corresponding to the distance the lever *U* was depressed. This distance is regulated by varying the depth of the slots in the plate *Q*, as shown in Figs. 1 and 4. The tongues between the slots are pointed, to facilitate the entrance of the lever.

*F*, Figs. 1 and 3, is an index of the letters and characters contained in the segment *A*, and may be placed either at *F*, as shown, or at the slotted plate *Q*. *u* is a pointer attached to the arm *A'*. If the segment or carrier *A* were extended, two or more sets of letters might be contained in a single row, but it would make the sweep of the handle *7* most too great for convenient or rapid work, and so we place the type in two rows, as shown; and in doing this it becomes necessary to shift the position of the type-carrier, so as to bring either row directly under the roller *C*. That this may be done the stud *E*, which supports the segment *A*, the plate *Q*, index *F*, and device for throwing the hammer are attached to the upper sliding plate, *B*, previously described, while the hammer is attached to the lower and stationary plate, *B'*, the latter being cut away to allow of the horizontal movement of the stem *G* and pawl *h*. So it may be seen that by sliding the upper plate, *B*, back and forth either set of type may be brought directly under the roller *C* and over the hammer *H*, both of which remain stationary.

The same result could be obtained by keeping the type-carrier and other parts stationary and shifting the roller *C* and hammer *h*; but we prefer the plan described.

The bell-crank lever *V*, Fig. 2, serves to shift the plate *B*. It is pivoted to the lower plate, *B'*, and engages at one end with a pin in the upper plate. As the stem *G*, through which motion is imparted to the feeding device, necessarily moves or shifts its position with the plate *B*, the connecting-pin *s*, Fig. 1, is made long enough to remain in the slot in *g* when the latter is in either position.

The ink-ribbon rollers *r r R'* are attached to the sliding plate *B*, and a hook, *w*, Figs. 1 and 2, pivoted to *B*, drops over the flange of the spool at *S* and causes it to move with the others.

As the lower-case letters do not require as much space on the paper as the capitals, the lever *U* is not allowed to descend as far as for the latter into the slots in the plate *Q*; and to regulate this the plate is made double, one, *Q'*, inside the other, Figs. 1, 2, and 4, and the inner one is held so that it may have a slight lateral movement. In this inside plate there are two sets of notches—one set that correspond in depth to the notches in the outer plate, and one set not quite as deep for the small letters.

When printing capitals the deep notches are made to coincide with those in the outside plate; but when small letters are to be made the shallow set of notches is brought to coincide with those in the outside plate, and con-



sequently the lever U cannot descend as far, and the paper-carriage is moved accordingly.

The notches do not all vary to the same extent, but the shallow ones bear the same relation to the deep ones that the spaces required for the lower-case letters do to the spaces for capitals. (See Fig. 4.)

The inner segment or plate, Q', is notched on the lower side, as at y, Fig. 4, so that the lever V may pass through it, and as the latter is moved from side to side to shift the position of the plate B it also shifts the position of Q'.

The machine is operated by placing the hand on the handle 7 and depressing it into one of the notches, when the proper letter is indicated by the pointer. Capitals or lower-case can be made at will by moving the lever V from side to side.

To produce manifold printing, the spring z, that throws the hammer, can be moved farther from the fulcrum of l, and thereby increase the blow of the hammer.

We do not claim as new the segment A, having grooves or slots for carrying type, as we are aware that a similar carrier with one row of grooves has been used.

We do not claim the guide-plate Q, neither the lever U, with its connection through the center of oscillation of the segment, as we know they are not new.

We claim as our invention—

1. In a type-writer, the segmental type-carrier A, having two or more parallel rows of slots for type, *a a*, substantially as and for the purpose set forth.

2. The combination of the type-carrier A, provided with two or more rows of spaces for type, the sliding plate B, and paper-carrier D, for the purposes set forth.

3. The combination of the type-carrier A, sliding base B, lever U, and guide-plates Q Q', substantially as described.

4. The combination of the lever U, stem G, pawl h, lever l, and spring z with the hammer H, for operating the hammer, as shown.

5. The combination of the lever U, the stem G, pin 8, and the pawl pivoted to the lever j with the ratchet k, shaft L', pulleys L K, rollers R R, belt m, clamping-lever f f', and paper-carrier D, for moving said paper-carrier after each stroke of hammer, as herein shown and described.

6. The combination of the lever U, stem G, and the belt and pulleys operated by the pawl-and-ratchet mechanism with the spools R' and S and the rollers r r for moving the ink-ribbon after each stroke of the hammer, as shown.

7. The combination of the lever V, plates B B', and type-carrier A, for shifting the movable plate and placing either capitals or small letters over the hammer, as desired, as shown and described.

8. The combination of the supplementary guide-plate Q' with the guide-plate Q, substantially as and for the purpose shown.

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Witnesses:

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