

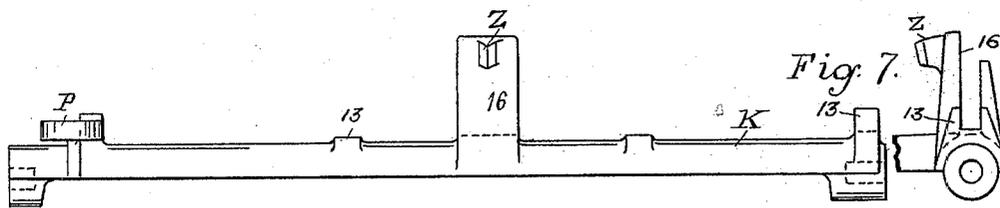
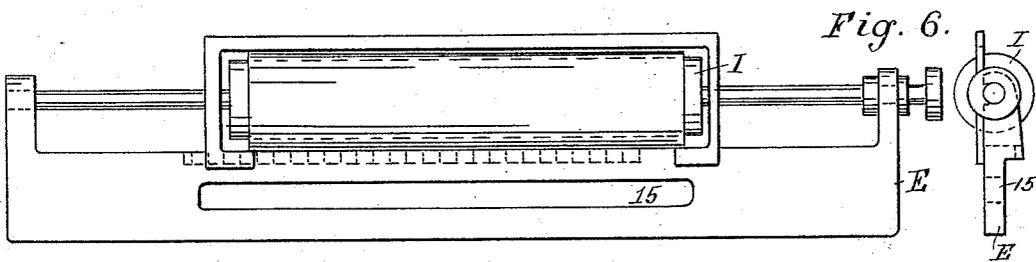
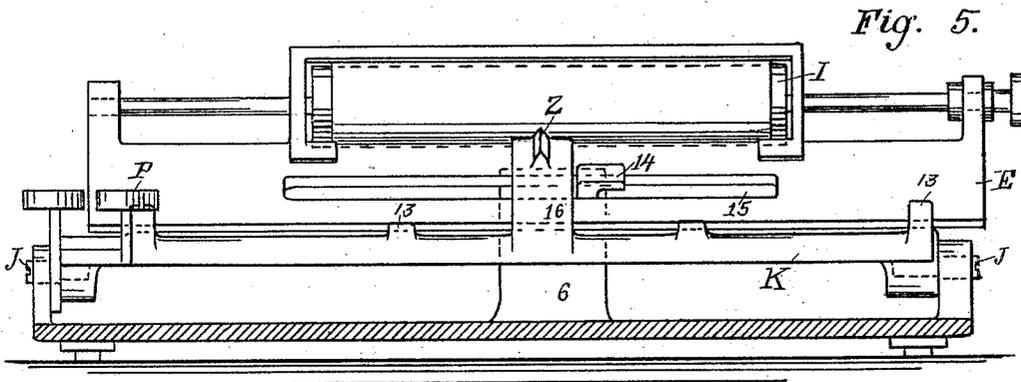
(No Model.)

2 Sheets—Sheet 2.

B. A. BROOKS.
TYPE WRITING MACHINE.

No. 476,942.

Patented June 14, 1892.



Witnesses:
[Signature]
[Signature]

Inventor:
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UNITED STATES PATENT OFFICE.

BYRON A. BROOKS, OF BROOKLYN, NEW YORK.

TYPE-WRITING MACHINE.

SPECIFICATION forming part of Letters Patent No. 476,942, dated June 14, 1892.

Application filed July 31, 1889. Serial No. 319,275. (No model.) Patented in England August 13, 1889, No. 12,733.

To all whom it may concern:

Be it known that I, BYRON A. BROOKS, a citizen of the United States, residing in Brooklyn, county of Kings, and State of New York, have invented certain new and useful Improvements in Type-Writing Machines, (for which I have obtained Letters Patent in Great Britain, No. 12,733, dated August 13, 1889,) of which the following is a description in such full, clear, concise, and exact terms as will enable others to practice my invention, reference being had to the accompanying drawings, making part of this specification, and to the letters and figures of reference marked thereon.

Similar letters and numerals of reference indicate corresponding parts in all the figures of drawings.

The object of my invention is to produce a simple, cheap, and efficient type-writing machine.

My invention consists of certain novel parts and combinations of parts, which will be specifically designated in the claims concluding this specification.

In the accompanying drawings I have shown a machine embodying all the novel features of my present invention in the form in which I now prefer to embody them; but it will be understood that equivalent devices may be employed without departing from the spirit of my invention and without exceeding the scope of the concluding claims.

In the accompanying drawings, Figure 1 is a top or plan view of the machine. Fig. 2 is an end view, partly in section, of the same; and Fig. 3 is a detail view of the key-lever for spacing between words. Fig. 4 shows in detail the hook and the slot in the platen-carriage, by which the vibration of the platen is arrested at the end of the line. Fig. 5 is a front view of the machine, the type-wheel, index-plate, &c., being removed so as to better show the platen and its attendant parts. Fig. 6 is a front and end view of a part of Fig. 5, and Fig. 7 is a front and end view of another part of Fig. 5.

I will now describe the machine illustrated in the accompanying drawings.

A is a type-wheel carrying on its periphery a plurality of rows of type 2 3. This type-

wheel is rigidly attached to a shaft M by means of a set-screw 4.

B is a wheel having V-shaped teeth cut on its periphery. It is carried on the shaft M, but is not rigidly attached to it. It has a downward-projecting grooved collar *a*, cast integral therewith. A pin 12, attached to the frame of the machine, takes in said groove and prevents said wheel being raised when the shaft M is raised.

5 is a pin attached to the wheel B and projecting upward through the web of the type-wheel, which is tapped to loosely fit said pin. By means of this pin the wheel B is caused to revolve with the type-wheel A, although permitting the shaft M and the type-wheel to be raised, while the wheel B remains stationary. The shaft M is carried in the frame of the machine 6 6 and is provided with a collar 7.

G is a key-lever pivoted to the frame of the machine, one end of which takes under the collar 7, so that when the key G is depressed the shaft M is caused to slide in its bearings in the direction of its axis, and the type-wheel attached thereto is raised so as to bring another row of type 3 opposite the printing-point.

8 is a set-screw, which determines the position of greatest elevation of the key G, and this set-screw is so adjusted that the upper row of types 2 on the type-wheel is normally opposite the printing-point.

C is an oscillating arm pivoted to the frame of the machine, carrying on one end a key O and on the other end a gear-segment H, which meshes with a small gear-wheel N, attached to the wheel B. As the wheel B is connected with the type-wheel A by means of the pin 5, which communicates all motion of revolution from the one to the other, it is plain that as the toothed segment 8 oscillates, thereby causing the wheel N to revolve more or less, such motion of revolution will be imparted to the type-wheel A.

L is a letter-plate, over which the arm C oscillates, and the proportion of the parts and the arrangement of the letters are such that when the arm C is over a given character on the letter-plate the corresponding type on the type-wheel will be opposite the printing-point. I have shown but two rows of characters on

the letter-plate and but two rows of type on the type-wheel; but of course more rows may be employed.

I' is an inking-roller, which normally stands in the position illustrated in Fig. 1—that is, between the type opposite the printing-point on the platen. This inking-roller is carried on a bar *y'* which is connected to a pivot-rod 9. To this rod 9 is attached a projection 10, which is connected with the vibrating platen-carriage E, hereinafter described, by a link *y*, which is not in line with said link and acts something like a bell-crank lever, so that as the platen-carriage rocks forward the link is also thrown forward, and, pushing against the pivot carried on the projection 10, causes the pivot-rod 9 to turn and to throw the inking-roller into the position illustrated by dotted lines in Fig. 1.

K is a vibrating and non-traveling primary platen-carriage set upon the lugs J J, attached to the base of the machine. This carriage has attached to it grooved projections 13, which form tracks for the sliding frame or longitudinally-traveling secondary platen-carriage E, carrying the platen I. P is a key-lever attached to the primary carriage K, by means of which said carriage is caused to turn about its axis, and as it turns to throw the platen-carriage E forward and the platen itself into contact with the type on the type-wheel standing opposite the printing-point. R is a spring set under the key-lever P, by means of which it is returned to its normal position after each printing impulse. The construction of these parts is more clearly indicated in Figs. 5, 6, and 7, where the platen is carried by a traveling and vibrating platen-carriage set in a non-traveling vibrating carriage, with attendant parts shown in detail.

14 is a hook attached to the frame of the machine. (See Fig. 5.) 15 is a slit cut longitudinally through the traveling platen-carriage E. Through this slit the hook 14 projects, and when the platen has reached the end of a line of print the hook has reached the end of the slit 15 and projects over the body of the frame E. Until the end of the line is reached this hook passes through the slit each time the platen-carriage is vibrated. When the hook projects over the body of the carriage E, the carriage is prevented from moving forward when the printing key-lever is struck far enough to press the platen against the face of the printing-type on the type-wheel. This construction makes it impossible for the operator to blur the last letter on a line by printing another letter over it.

The primary carriage K carries a projection 16, which is provided with a tooth Z, provided with a face cut in the shape of the letter V. At each printing impulse this projection Z is thrown forward into one of the V-shaped recesses of the wheel B. As the V-shaped depressions on said wheel correspond with the number and position of the type on the type-wheel, the projection Z and the wheel B form

a means for bringing each letter directly opposite the printing-point on the platen, so that the wheel will always present a letter squarely to the approaching platen. With such means a much greater speed may be obtained in this class of machines, because it makes it unnecessary to accurately bring the pointer on the oscillating arm C to a given position on the letter-plate before printing. As long as the pointer is brought nearer to the character on the letter-plate corresponding with the letter or character which it is desired to print than to any other character on the plate the means just described will insure the proper type being brought exactly to the printing position.

Pivoted to the frame of the machine is a pawl F, on the under side of which bears a spring 11. Attached to the secondary platen-carriage is a ratchet-bar 17, into the teeth of which the said pawl F takes. When the secondary platen-carriage is thrown forward to print, the forward end of said pawl will be, through the agency of the spring 11, pressed forward until it drops into the next tooth. When the secondary platen-carriage is thrown away from the type-wheel, it will be caused to advance the length of one tooth, because said pawl is pivoted to the stationary frame of the machine, while the ratchet attached to the platen is movable. In this way spacing between letters after each printing impulse is accomplished. A pin *f* is placed under the rear end of the pawl F to prevent its being thrown by its own momentum out of engagement with rack 17 when the platen-carriage retreats from the type-wheel, and 19 is a pin also attached to the frame of the machine, limiting the forward motion of the pawl to prevent it moving forward far enough to space more than one tooth at a time.

Fig. 3 is a side view of the key-lever S for spacing between words. This lever is pivoted to the frame of the machine and has an elongated pivot-hole which permits the said lever to have a longitudinal motion with relation to said pivot. On the rear end of said key-lever is a cam-surface 18, working in connection with a projection 20 from the frame of the machine. W is a spring on the under side of the said key-lever to normally hold its front end in an elevated position. T is a stop for limiting the downward motion of the lever S. 21 is a cam-surface attached to the frame of the machine in front of the cam-shaped projection U, attached to the key-lever S. As the key-lever is depressed it slides backward longitudinally on its pivot with a rocking motion, controlled by the shape of the cam-surface 21. As the key-lever rises it slides forward longitudinally on its pivot with a rocking motion, controlled by the shape of the cam-surface 18, working in connection with the projection 20 on the frame. *s'* is a projection from the primary carriage K, extending under the key-lever S. As said key-lever is depressed it therefore depresses the pro-

jection *s'* and throws the platen-carriage forward. This forward motion must be sufficient to cause the platen to space, but it must not be sufficient to throw the platen in contact with the face of the printing-type. The stop *T* is placed so that it permits the key-lever *S* to depress the projection *s'* far enough to cause the platen-carriage to space, but not far enough to throw it in contact with the printing-types. In this construction it is desirable to provide some means to prevent the projection *s'* being thrown down by its momentum too far and cause the platen to be pressed against a type, and to this end I have shown the cam-shaped hook *U* on the under side of the key-lever *S*, which fits under the projection *s'*. When the key-lever *S* is in its normal position, this hook *W* is not under the projection *s'*, and therefore the platen-carriage can be thrown forward far enough to have the paper carried on the platen against the type by the operation of the key *P*; but when the said key-lever *S* is depressed it is, through the agency of the cam-surface 21, above described, at the same time thrown backward, so that the hook *U* takes under the projection *s'*, and in this position prevents the momentum of the parts carrying the platen-carriage too far forward.

The following is a description of the manner in which the machine above described operates: The oscillating arm *C* is brought directly over the character on the letter-plate *L* which is to be printed. While this arm is held in said position the operator with the left hand depresses the key-lever *P* and throws the platen-carriage forward against the face of the type standing at the printing-point. As the platen-carriage comes forward the inking-roller *I'* is withdrawn out of the path of the approaching platen and into the position indicated in dotted lines on Fig. 1. At the same time the spacing-pawl *F* falls into a new tooth on the ratchet-bar 17, and as the platen retreats from the type-wheel it is caused to advance and space between letters. By depressing the key-lever *G* the type-wheel is raised so as to bring the lower row of types opposite the printing-point. When it is desired to space between words, the lever *S* is depressed, which causes the platen to advance toward, but not to come in contact with, the type-wheel, and thus to space without printing. When the end of a line is reached, the hook 14 takes over the end of the slot 15 and prevents further printing on the same line. To draw the platen-carriage back, the lever *S* is depressed, which throws the platen-carriage forward far enough to disengage the pawl *F* from the rack 17, but not far enough to print, in which position the platen-carriage may be drawn back to begin a new line of print.

What I claim, and desire to secure by Letters Patent, is—

1. In a type-writing machine, the combination of a type-wheel provided with a plurality

of rows of type, a type-wheel shaft having a longitudinal motion to which said type-wheel is fixed, a pinion-wheel carried by but loosely connected with said shaft, a gear meshing in said pinion, an oscillating arm carrying said gear at one end and provided at its other end with a finger-piece and pointer, and means, substantially as described, for keeping said pinion fixed when said shaft moves longitudinally.

2. In a type-writing machine, the combination of a vibrating and non-traveling primary platen-carriage, means, substantially as described, for supporting and for vibrating said carriage, a longitudinally-traveling secondary platen-carriage carried by said primary carriage, said primary carriage being intermediate between said support and said secondary carriage, a rack attached to said secondary carriage, and a fixed pawl engaging the said rack to space between letters, substantially as described.

3. In a type-writing machine, the combination of a type-wheel, a letter-plate, an arm provided with a hand-piece and pointer, a vibrating and non-traveling primary platen-carriage, means, substantially as described, for supporting and for vibrating said carriage, and a longitudinally-traveling secondary platen-carriage carried by said primary carriage, said primary carriage being intermediate between said support and said secondary carriage, substantially as described.

4. In a type-writing machine, the combination of a platen, a type-wheel, a vibrating non-traveling primary platen-carriage, means, substantially as described, for supporting and for vibrating said carriage, a longitudinally-traveling secondary platen-carriage carried by said primary carriage, said primary carriage being intermediate between said support and said secondary carriage, a printing key-lever rigidly connected to said primary carriage for causing it to vibrate to print, and a spacing key-lever loosely connected to said carriage for causing it to vibrate to space between words, substantially as described.

5. In a type-writing machine, the combination of a type-wheel attached to a stationary support, a platen, a vibrating non-traveling primary platen-carriage, means, substantially as described, for supporting and for vibrating said carriage, and a secondary platen-carriage traveling longitudinally to space between letters carried by said primary carriage, said primary carriage being intermediate between said support and said secondary carriage, substantially as described.

6. In a type-writing machine, the combination of a platen moving longitudinally to space between letters, a type-wheel attached to a stationary support, a pinion on the type-wheel shaft, a notched wheel on said shaft, a vibrating non-traveling primary platen-carriage, means, substantially as described, for supporting and for vibrating said carriage, a longitudinally-traveling secondary platen-car-

riage carried thereby, said primary carriage being intermediate between said support and said secondary carriage, and a projection from said primary carriage engaging with said notched wheel, substantially as described.

7. In a type-writing machine, the combination of a type-wheel, a type-wheel shaft having a longitudinal motion to which said type-wheel is fixed and by which it is shifted to bring different rows of type into printing position, a notched wheel and a pinion-wheel carried by but not fixed to said shaft for revolving said shaft, and means, substantially as described, for moving said shaft longitudinally, and means, substantially as described, for keeping said pinion and notched wheel fixed when said shaft moves longitudinally, substantially as described.

8. In a type-writing machine, the combination of a type-wheel provided with a plurality of rows of type, an index-plate, an oscillating arm provided with a pointer directly indicating the letter to be printed and with a hand-piece, a vibrating non-traveling platen-carriage, means, substantially as described, for supporting and for vibrating said carriage, a secondary longitudinally-traveling platen-carriage to space between letters carried thereby, said primary carriage being intermediate between said support and said secondary carriage, a printing key-lever independent of said pointer and hand-piece, and a shifting key-lever, substantially as described.

9. In a type-writing machine, the combination of a vibrating and longitudinally-traveling platen-carriage, a platen carried thereby, and a fixed projection arranged in the path of said platen-carriage when it approaches the end of its longitudinal motion by which printing is prevented when the end of a line is reached, substantially as described.

10. In a type-writing machine, the combination, with the mechanism for spacing between words, of a key-lever having a vibrating and also a longitudinal motion, a projection in the path of the vibrating motions of said key-lever, and a hook which takes under said projection by the longitudinal motion of said key-lever, substantially as described.

11. In a type-writing machine, the combination of a platen, a type-wheel, a notched wheel carried by the axis of said wheel, a vibrating non-traveling platen-carriage, means, substantially as described, for supporting and for vibrating said carriage, a longitudinally-traveling secondary platen-carriage carried thereby, said primary carriage being intermediate between said support and said secondary carriage, and a projection on said primary carriage which engages with the notches on said notched wheel when the carriage is vibrated, substantially as described.

12. In a type-writing machine, the combination of a type-wheel attached to a stationary support, a notched wheel carried by the axis of said type-wheel, a vibrating non-traveling primary platen-carriage, means, substantially as described, for supporting and for vibrating said carriage, a longitudinally-traveling secondary platen-carriage carried thereby, said primary carriage being intermediate between said support and said secondary carriage, a printing key-lever rigidly connected to said primary carriage for causing it to vibrate to print, and a projection on said primary carriage which engages with the notches on said notched wheel when the carriage is vibrated, substantially as described.

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Witnesses:

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