

No. 647,804.

Patented Apr. 17, 1900.

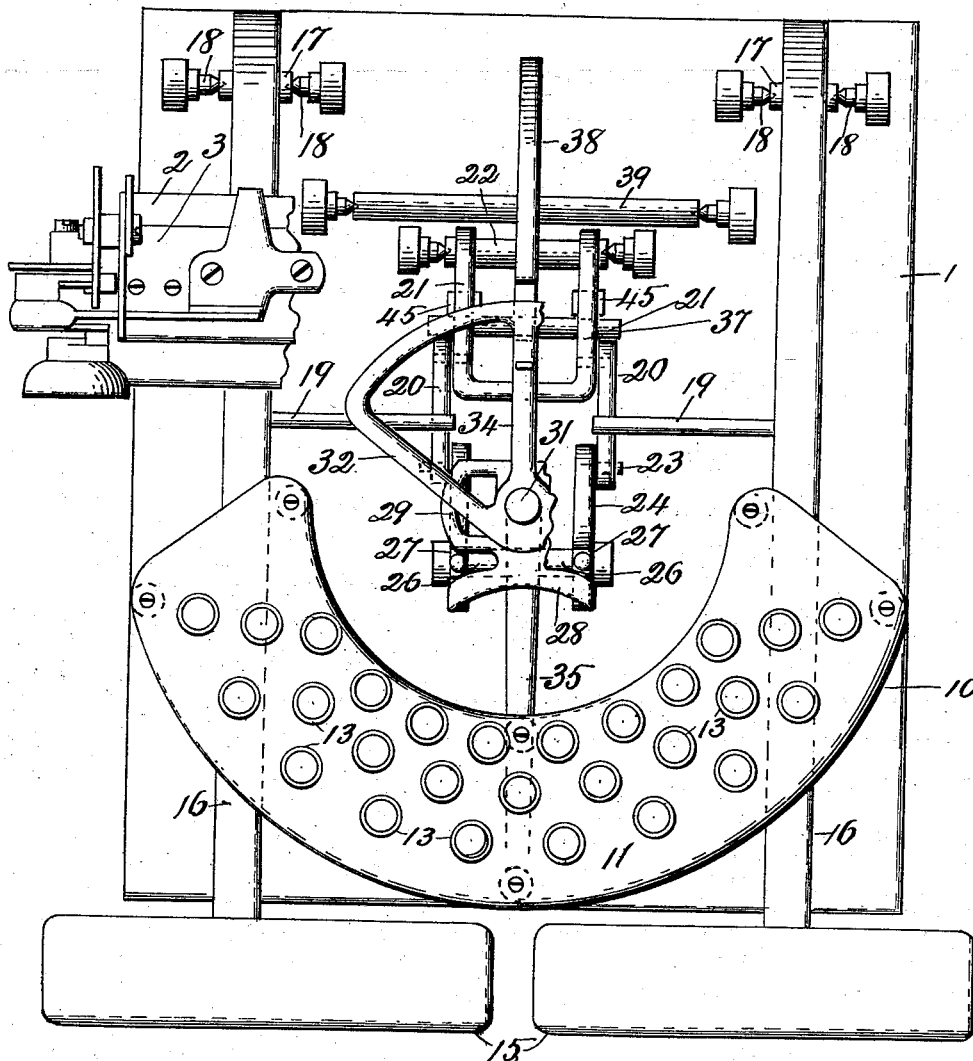
E. H. BYER.
TYPE WRITING MACHINE.

(Application filed Sept. 29, 1899.)

(No Model.)

2 Sheets—Sheet 1.

Fig. 1.



Witnesses
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2 Sheets—Sheet 2.

Fig. 2.

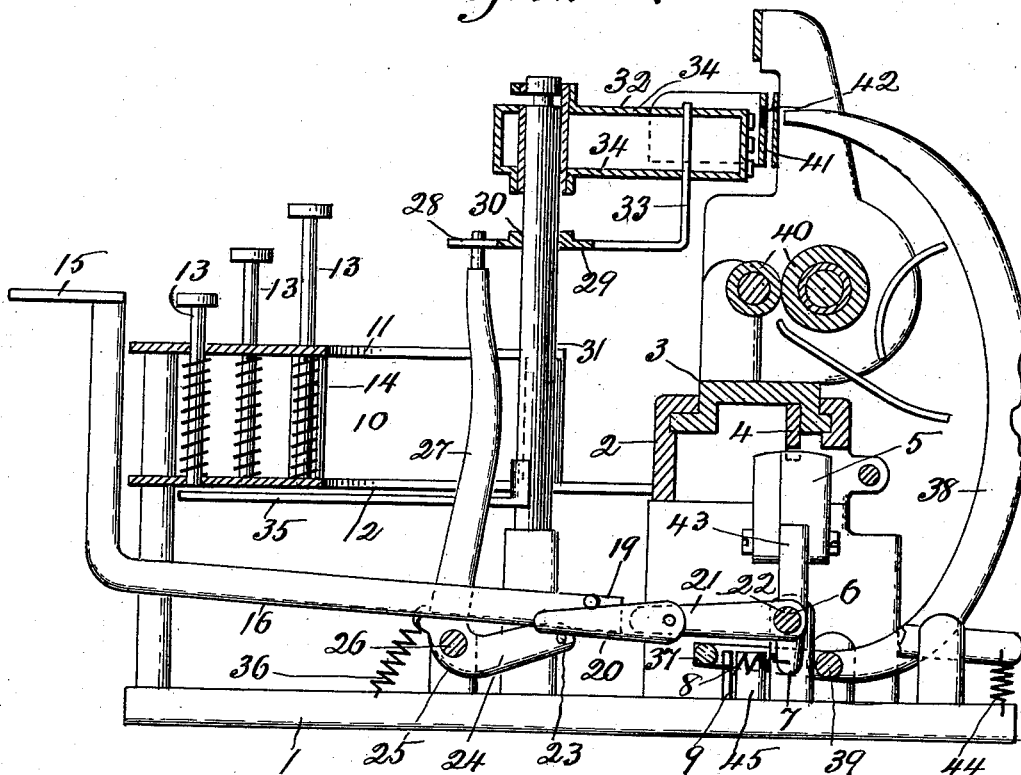
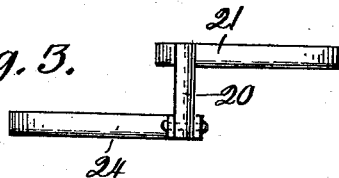


Fig. 3.



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UNITED STATES PATENT OFFICE.

EDGAR HOWARD BYER, OF HARRISBURG, PENNSYLVANIA, ASSIGNOR TO
WILLIAM P. QUENTELL, OF SAME PLACE.

TYPE-WRITING MACHINE.

SPECIFICATION forming part of Letters Patent No. 647,804, dated April 17, 1900.

Application filed September 29, 1899. Serial No. 732,081. (No model.)

To all whom it may concern:

Be it known that I, EDGAR HOWARD BYER, a citizen of the United States, residing at Harrisburg, in the county of Dauphin and State of Pennsylvania, have invented certain new and useful Improvements in Type-Writing Machines, of which the following is a specification.

My invention relates to type-writing machines, and has for its objects to provide a machine that will give a very fine alinement and be capable of a powerful printing blow and therefore particularly adapted for mimeograph and duplicating work, to make a machine of this character of very simple and inexpensive construction with parts that do not require as great accuracy in manufacture or as fine adjustment as the ordinary machine, to afford a direct and positive operating connection between the spacing, printing, and positioning mechanisms and their controlling device and between the controlling device and the actuating-key lever, and to provide means to give a sharp positive stroke and return to the printing-hammer, whereby clean unblurred printing is insured.

My invention has relation to that class of machines in which a rotatable type-wheel or type-segment and a vibratory impression device, such as a rocking hammer, effect the printing. It also relates to those machines in which two sets of keys are employed, one for predetermining the printing position of the type-wheel and the other for operating the positioning, spacing, and impression mechanisms.

The invention consists, generally stated, in keys which indicate the letters to be printed and serve as stops for the rotatable type-wheel to fix the printing position thereof; another set of keys which serve to rotate the type-wheel to printing position, to space, and to impel the hammer or equivalent impression device against the type; an operating-rocker or equivalent mechanism comprising a bail and a pivoted link and having connections with the positioning, printing, and spacing mechanisms; means of direct engagement between the actuating-lever and the rocker, and a stop for the bail of the rocker to give a

sudden jerk and rebound to the impression device at the end of its printing-stroke.

In the accompanying drawings, which illustrate the invention and in which like figures of reference denote the same parts throughout the different views, Figure 1 is a plan view of a machine embodying my improvements; Fig. 2, a side elevation, partly in section; and Fig. 3, a detail plan of a modified construction of mounting the rocker-link.

Referring to the drawings, 1 is the base of the machine, Figs. 1 and 2, provided with a track 2 for a paper-carriage 3. The feeding mechanism of the carriage, comprising a rack 4 and dog 5 and suitable impelling means, is known and need not be described in detail. The dog 5 has its rock-shaft or fulcrum at 6 and is moved or held to one position by arm 7 and spring 8, secured to a fixed post or block 9. The dog is rocked against the tension of spring 8 by means hereinafter described.

The keyboard 10 at the front of the machine consists of two fixed plates 11 and 12. In suitable slots in these plates are mounted the stems of keys 13, supported and held normally in raised position by spiral springs 14. These keys are provided with characters corresponding in position to those of the type-wheel and are preferably arranged in arcs of concentric circles. These keys serve merely as index-keys to indicate the characters to be printed and to contact with an arm carried by the type-wheel to stop the wheel at the desired type character. In front of the index-keys 13 are actuating-keys 15, so located as to permit them to be depressed by the part of the hand adjoining the wrist when one of the index-keys is pressed down by a finger of the same hand. Each actuating-key is mounted on a main lever 16, pivoted by means of an arm 17 between cones or other suitable bearings 18. A horizontal pin or arm 19 on lever 16 extends inwardly over a link or lever 20, fulcrumed at its rear end to the forward end of an arm of a bail 21, which is mounted on a rocking shaft 22, journaled in the frame. The bail and link constitute a rocker which actuates the positioning, printing, and spacing mechanisms, as hereinafter described.

The free end of lever 20 rests on a pin or lug 23, projecting laterally from an arm 24 of a rocking driver-lever 25, journaled at 26 in the frame.

5 An upright arm 27 of the driver-lever has its upper end extending between an arm 28 and bracket 29 of a sleeve 30, fixed to a vertical shaft 31. The shaft is rotatable in its bearings and carries at its upper part a type-
10 wheel or type-segment 32, splined to the shaft or otherwise secured thereto, so as to be rotatable with the same, but free to move longitudinally thereon. From the bracket 29 extends a right-angled arm 33, which engages
15 spokes 34 of the type-wheel. The type-wheel is made in two sections to obtain lightness and strength.

A stop-arm 35 is secured to shaft 31 and extends horizontally forward under the stems
20 of the index-keys 13, so as to strike against a depressed stem when the type-wheel shaft is rotated.

To the end of arm 27 of the driver-lever is secured a return-spring 36, which tends to
25 normally hold arm 24 tilted upward and arm 27 away from bracket 29.

Each side arm of bail 21 rests over and is adapted to strike against the arm or rod 37 of a printing-hammer 38, pivoted at 39 to the
30 frame. The hammer extends opposite the face of the type and when actuated forces the paper fed from the rollers 40 and back of plate 41 through an opening 42 in said plate and against a ribbon which travels between
35 the plate and type-wheel.

To the rear end of arm of bail 21 is secured an arm 43, which is rocked by and with said bail. The arm 43 is connected to the pivoted
40 dog 5. A bar or block 45 is placed below the bail 21 in such relation to the bail and hammer that the bail will strike the stop just before the end of the stroke of the hammer. The hammer tends to normally swing back away from the type and lift the bail, and in
45 order to lift and return the actuating-lever 16 a return-spring 44 is secured to the rear end thereof and normally holds the pivoted end down and key end up.

Fig. 3 shows a modified construction of
50 mounting the link or lever 20. It is fulcrumed to arm 24 of driver-lever 25, at a right angle thereto, and its free end extends over and is adapted to actuate bail 21. The bail and link, though not fulcrumed together in
55 this instance, still constitute in function a single rocker device for actuating the positioning, printing, and spacing mechanisms.

The operation of the machine is as follows: To print a certain character, one of the index-
60 keys 13 is depressed by a finger, and then by the part of the hand adjoining the wrist the actuating-key on the same side of the keyboard is struck. The main lever 16 is thus depressed, and by means of pin 19 presses
65 down the lever 20, which in turn rocks the type-wheel driver-lever. The resistance of return-spring 36 and the inertia of the type-

wheel combined are less than that of the dog-controlling spring 8 and carriage-spring, which latter may be of any ordinary form, 70 and hence the pressure transmitted from main lever 16 to link 20 will cause the driver-lever 25 to move down before the bail 21 is rocked. The rocking driver-lever will rotate the type-wheel by striking against bracket 29 until 75 the stop-arm 35 strikes the stem of the depressed index-key, whereupon the type character corresponding to the key will be presented and held in correct printing position. Further movement of type-wheel and driver- 80 lever 35 being impossible, the continued pressure from the main actuating-lever on link 20 will then cause the bail 21 to move down and strike the arm 37, and thereby rock the hammer 38, which will be impelled to the type- 85 wheel. The bail will strike the stop-piece 45 just before the end of the swing of the hammer, and will thus be given a sudden positive stop, which will impart a sudden jerk to the hammer at the end of its movement, thereby 90 causing it to fly against the paper and type with a sharp clean stroke and immediately rebound, so that the type-wheel in its return rotation will not drag against the end of the hammer and smear the imprint on the paper. 95 At the same time that the hammer is rocked the arm 43 of the bail will tilt the dog 5 away from the carriage-rack and permit the carriage to be moved one space.

Any suitable forms of spacing mechanism, 100 spacing-key, type-wheel-shifting mechanism, and inking mechanism may be employed in connection with my improved machine; but as the details of such mechanism form no part of my invention they are not herein set 105 out.

The rocker, comprising the pivoted bail and link and its combinations with the index stop-keys, which do no actuating of working parts, and with the main actuating-keys and 110 with other coöperative parts, constitute the novel features of my invention, and other parts of the machine herein described and shown are set forth to present a complete and operative device. 115

Having thus described my invention, what I claim is—

1. In a type-writing machine, in combination with printing and spacing mechanisms, said printing mechanism comprising a type- 120 carrier and impression mechanism, character-keys for only predetermining the printing position of the type-carrier, an actuating-key, a pivoted lever carrying said actuating-key, a controlling-rocker, means to operate said 125 printing and spacing mechanisms by the rocker, said lever provided with means to contact with and actuate the rocker, substantially as described.

2. In a type-writing machine, in combination 130 with a rotatable type-wheel, a rocker, a key-lever for actuating said rocker, a positioning mechanism for said wheel, impression and spacing mechanisms of greater resistance

than said positioning mechanism, said rocker having means to engage and operate said positioning, impression and spacing mechanisms, whereby said positioning mechanism 5 will be operated before the impression and spacing mechanisms, substantially as described.

3. In a type-writing machine, in combination with a rotatable type-wheel, a stop-arm 10 connected to and moving with said wheel, index or character keys having stems depressible into the path of the stop-arm, mechanism to rotate said wheel, a rocking link engaging said mechanism, a lever to rock said link, and 15 a key on said lever, substantially as described.

4. In a type-writing machine, in combination with the rotatable type-wheel and its stop-arm, the index or character keys and their stems, a rocking bail, mechanism to rotate 20 said wheel, a link connecting said bail and wheel rotating mechanism, a spacing mechanism, a hammer, means to operate said spacing mechanism and hammer by the bail, and a main lever, said lever provided with means 25 to actuate the bail and link, substantially as described.

5. In a type-writing machine, in combination with the rotatable type-wheel and its stop-arm, the index-keys and their stems for alone 30 predetermining the printing position of the wheel, the actuating-keys and their levers, the positioning mechanism, the hammer, a rocking bail for actuating the hammer, a link for actuating the positioning mechanism, substantially as described. 35

6. In a type-writing machine, in combination with a rotatable type-wheel, a pivoted driver-lever therefor, a rocking lever for operating said driver-lever, an actuating-lever, 40 impression and spacing mechanisms and means to operate said mechanisms by the rocking of the rock-lever, substantially as described.

7. In a type-writing machine, in combination 45 with a rotatable shaft, a type-wheel and stop-arm carried by said shaft, index-keys, said keys having stems depressible into the path of the stop-arm, a rocking driver-lever

for said type-wheel, a spacing mechanism, a pivoted hammer, a rocking bail, means on 50 said bail to operate the spacing mechanism, an arm on said hammer with which said bail contacts, a link fulcrumed at one end to said bail and having its other end bearing on the driver-lever, a main actuating-lever, and a 55 projection on said lever adapted to engage said link, substantially as described.

8. In a type-writing machine, in combination with a type-carrier, a controlling device for said type-carrier consisting of a pivoted 60 bail, a link fulcrumed thereto, and an impression device and means to positively impel said impression device by said bail, and means to rock said link, substantially as described.

9. In a type-writing machine, in combination 65 with a rocking printing-hammer, an impelling-bail which strikes the hammer, a key-lever for actuating said bail, and a stop for arresting said bail short of the end of the hammer-stroke, substantially as described. 70

10. In a type-writing machine, in combination with a rotatable type-wheel, a rocking bail, a rocking hammer actuated by said bail, a link fulcrumed on said bail, mechanism to 75 revolve said wheel, said link connected with said mechanism, a main lever for rocking said link, and a stop to arrest the bail short of the end of the hammer-stroke, substantially as described.

11. In a type-writing machine, in combination 80 with the rotatable type-wheel and its stop-arm, the index-keys and their stems for alone predetermining the printing position of the wheel, the actuating-keys and their levers, the positioning mechanism, the hammer, a 85 rocking bail for actuating the hammer, a link for actuating the positioning mechanism, and a stop to arrest the bail short of the end of the hammer-stroke, substantially as described.

In testimony whereof I hereunto affix my 90 signature in the presence of two witnesses.

EDGAR HOWARD BYER.

Witnesses:

EUGENE SNYDER,
W. H. BYERLY.