

(No Model.)

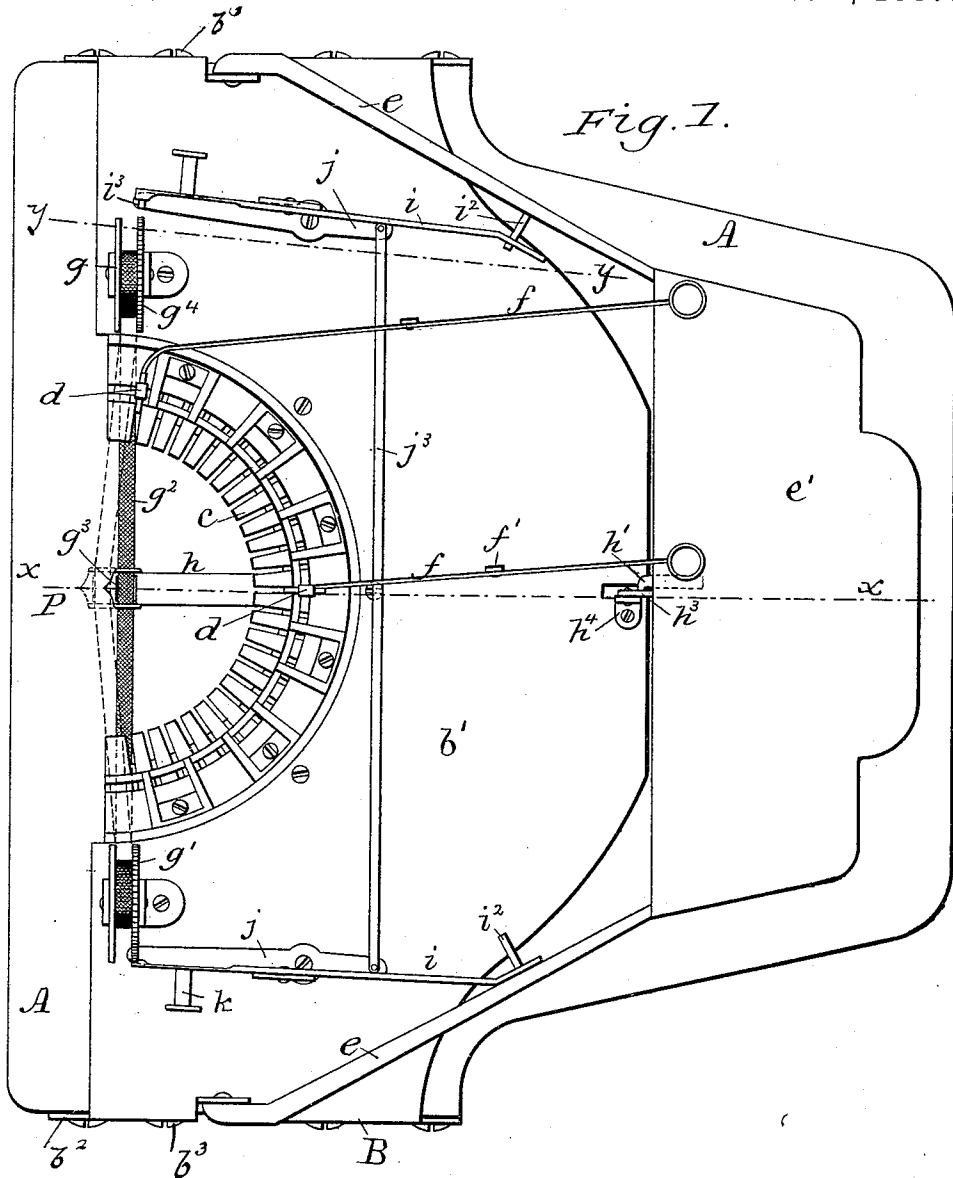
2 Sheets—Sheet 1.

A. W. CASH.

TYPE WRITING MACHINE.

No. 372,602.

Patented Nov. 1, 1887.



Witnesses:  
W. M. Dyorkman,  
H. P. Williams.

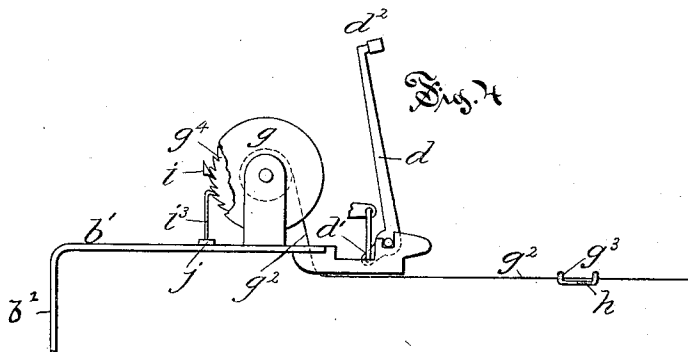
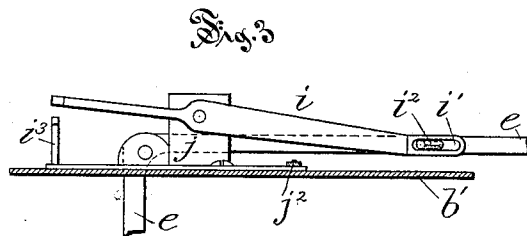
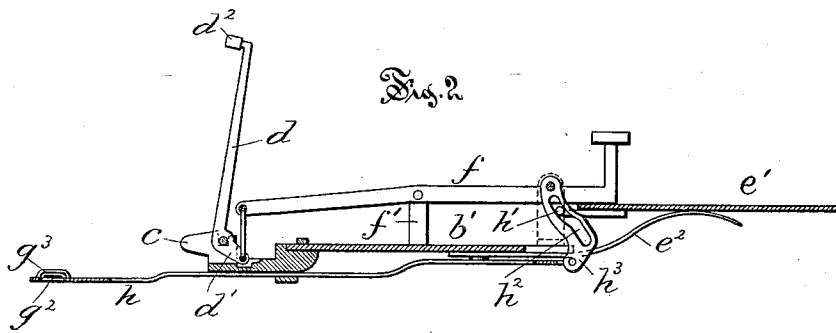
Inventor:  
Arthur W. Cash,  
By Simonds & Burdett,  
Attys.

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# UNITED STATES PATENT OFFICE.

ARTHUR W. CASH, OF HARTFORD, CONNECTICUT, ASSIGNOR, BY MESNE ASSIGNMENTS, TO THE TYPOGRAPH COMPANY, OF SAME PLACE.

## TYPE-WRITING MACHINE.

SPECIFICATION forming part of Letters Patent No. 372,602, dated November 1, 1887.

Application filed July 9, 1886. Serial No. 207,603. (No model.)

*To all whom it may concern:*

Be it known that I, ARTHUR W. CASH, of Hartford, Hartford county, Connecticut, have invented certain new and useful Improvements in Type-Writing Machines, of which the following is a full, clear, and exact description, whereby any one skilled in the art can make and use the same.

My within-described improvements relate particularly to and are adapted for use in connection with the type-writing machine forming the subject-matter of an application for Letters Patent filed by me April 24, 1886, Serial No. 200,107. The said type-writer is made up of the base that supports a platen that has a sliding motion below and in a plane parallel to the base that supports the key-levers and pivot-base. A peculiar detent-lever is located below the key-levers, and is the intermediate means of causing the motion of the platen when the key-levers are depressed.

The frame-work of the machine, the platen and its feed mechanism, and the detent-lever are substantially the same in my improved machine as in said prior device, the main features of my improvement herein described consisting of the ribbon-reels and connected ribbon-feed mechanism with the reel-reversing mechanism, in the reciprocating ribbon-guide and index-bar, and in details of these several parts and their combination, as more particularly hereinafter described, and pointed out in the claims.

Referring to the drawings, Figure 1 is a plan view of the frame of the machine, showing the detent-lever and as many only of the other parts as are necessary to illustrate my improvement. Fig. 2 is a view in vertical cross-section through the frame, as shown on plane denoted by line *xx* of Fig. 1. Fig. 3 is a view of the same on plane denoted by line *yy* of Fig. 1. Fig. 4 is a rear view of part of the frame, showing details of the ribbon-reel and of the type-bar.

In the accompanying drawings, the letter A denotes the bed, on which is supported the frame B, which, in this instance, is made of sheet metal, with a flat top, *b'*, having its end portion bent downward, as shown at *b<sup>2</sup>*, Fig. 4, screws *b<sup>3</sup>* being passed through said downward-projecting portion to secure the frame to the said bed A, as shown in Fig. 1. On the upper surface of this is secured the parti-

cular key-base *c*, to which are pivotally secured the type-levers *d*, two only of these levers being shown in the drawings. The detent-lever *e* branches and is pivotally connected to the frame on its opposite sides, and the front ends of the branches are joined by a broad pad, *e'*, directly over which are located the initial ends of the key-levers *f*. The detent-lever pad *e'* is held in its normal raised position close underneath the outer ends of the key-levers by means of a spring, *e<sup>2</sup>*, and each key as it is depressed pushes down the detent-lever and serves to actuate the platen, which, with its operating mechanism, is not shown nor described herein. Near the rear edge of the top *b'* of the frame and on opposite sides of the key-base *c* are secured the ribbon-reels *g g'*, in such position that a ribbon wound about them and stretched across between the reels and close to the upper surface of the platen will lie normally, so that the ribbon is wholly on one side of the point and of the line on which the types strike in writing. This is illustrated in Fig. 1 of the drawings, where the tape is shown in shaded outline and in full lines in its normal position, while its position when moved sidewise of the ribbon to cover the point where the types will strike is shown in dotted outline.

The key-lever *f* is pivotally supported on a post, *f'*, fast on the top of the frame, and is pivotally connected by a link, as shown in Figs. 2 and 4, to the arm *d'* of the type-bar, the outer end of which bar bears a type, *d<sup>2</sup>*, which is caused to strike forward and downward upon the point P when the outer or initial end of the lever is depressed. Each of the several types borne on the type-bars in a complete writer strikes of course directly on the same point. The position of this point is indicated to the operator of the machine by the index-bar *h*, that is supported on the under side of the frame-top, and has a sliding motion in a line passing through this point P. The reciprocating motion of the index-bar *h* is caused by the downward movement of the detent-lever, the pad *e'* bearing a pin, *h'*, that takes into a cam-slot, *h<sup>2</sup>*, made in the swinging block *h<sup>3</sup>*, that is pivotally supported on the post *h<sup>4</sup>*, fast to the frame and to the index-bar *h*. This slot *h<sup>2</sup>* is inclined in its upper part, and has a straight portion or dwell, so that the index-bar is thrust quickly forward before the de-

tent-lever reaches the downward limit of its play and before the type is caused to strike upon the ribbon and platen. The object of this is to enable the ribbon  $g^2$ , which is threaded through the guide  $g^3$  in the outer end of the index-bar, to be borne by the guide directly over the point where the type will strike.

As soon as the pressure on any one of the key-levers or the detent-lever is released, the upward motion of the detent-lever withdraws the index-bar and the ribbon, leaving the imprint of the type exposed on the paper.

The ribbon-feeding mechanism consists of a feed-lever,  $i$ , pivotally supported on the lever-base  $j$ , one end of this lever having a slot,  $i'$ , into which projects the pin  $i^2$ , that is fast to the side of the detent-lever, while the other end of the lever  $i$  has a hook that engages the ratchet-wheel  $g^4$ , borne on one side of the ribbon-reel, in such manner as to turn the reel with each downward movement of the detent-lever. The reel is held from turning, except under the pressure of the feed-lever, by means of the spring-pawl  $i^3$ , which is also borne on the lever-base  $j$ .

A feed device precisely similar to the one already described is connected to each ribbon-reel, and the lever-bases  $j$   $j'$  are connected by a rod,  $j^2$ , so that when one of the feed-levers is turned into engagement with one of the ribbon-reels the feed device on the opposite side of the key-base is made inoperative by throwing the parts out of engagement. This latter construction completes the reversing mechanism, and it is operated by means of the handle  $k$ , fast to one of the lever-bases, in convenient position for use.

I am aware that it is not new in a type-writing machine to provide means for moving the inking-ribbon to cover and uncover the printing-surface at the point where the types strike, such devices being shown in the United States patents to D. H. Sherman, dated June 5, 1877, to F. Wagner, dated October 5, 1880, and to R. J. Sheehy, dated September 2, 1884, and such a device I do not broadly claim.

I claim as my improvement—

1. In a type-writing machine, in combination, the detent-lever  $e$ , having a pad,  $e'$ , located in the path of motion of the key-levers  $f$ , the inking-ribbon  $g^2$ , extended across and over the surface to be printed upon, the reciprocating index-bar  $h$ , terminating in a pointer and having the ribbon-guide  $g^3$ , and the within-described mechanism for reciprocating the index-bar, all substantially as described.

2. In a type-writing machine, in combination with the pad  $e'$  of the detent-lever  $e$  in engagement with the swinging block  $h^3$ , the swinging block  $h^3$ , having a cam-slot,  $h^2$ , the reciprocating index-bar  $h$ , with the ribbon-guide  $g^3$ , and the inking-ribbon  $g^2$ , all substantially as described.

3. In combination with the frame B of a type-writing machine, the detent-lever  $e$ , with the pad  $e'$  and lever-spring  $e^2$ , the ribbon-reels

$g$   $g'$ , the within-described mechanism of levers and ratchets connecting the said reels and the detent-lever  $e$ , the inking-ribbon  $g^2$ , and the reciprocating index-bar  $h$ , bearing an index or pointer and having the ribbon-guide  $g^3$ , all substantially as described.

4. In combination, in a type-writing machine, the detent-lever  $e$ , branching to opposite sides of the frame of the machine and having the pad  $e'$ , the ribbon-reels, the reel-feeding mechanism, as described, connecting the detent-lever and the reels, the inking-ribbon, and the reciprocating index-bar having the ribbon-guide, all substantially as described.

5. In combination with the key-levers, the pad  $e'$  of the detent-lever, having a pin,  $h'$ , engaging the slot in the cam-block, the cam-block pivoted to the frame of the machine and to the index-bar and having the slot  $h^3$ , with the incline and dwell, the reciprocating index-bar having a pointed end and a ribbon-guide, and the inking-ribbon with its supporting-reels and passing through the guide, all substantially as described.

6. In combination with the ribbon-reels  $g$  and  $g'$ , each bearing a ratchet-wheel, the ribbon-feed mechanism consisting of a feed-lever,  $i$ , pivoted on the lever-base  $j$ , with one end of the lever engaging the detent lever  $e$  and the other end having a hook adapted to engage the ratchet-wheel  $g^4$ , and the detent-lever  $e$ , with its pad  $e'$ , all substantially as described.

7. In combination with the ribbon-reels  $g$   $g'$ , each having a ratchet-wheel, the lever-base  $j$ , pivoted to the frame of the machine, with one end adapted to swing toward and from the ribbon-reels, the feed lever  $i$ , pivoted to the said base and adapted to move in a plane across the plane of movement of the said base, with one end of the said lever having a slot,  $i'$ , and the other end bearing a hook adapted to engage the ratchet-wheel on the reel, the spring-pawl  $i^3$ , borne on the lever-base  $j$ , and the detent-lever  $e$ , with the pin  $i^2$ , that engages the slot in the feed-lever  $i$ , all substantially as described.

8. In combination with the frame B, the detent lever  $e$ , branching to opposite sides of the frame and pivoted thereto and having a pad,  $e'$ , the ribbon-reels secured to the frame on opposite sides of the type-base, the lever-bases  $j$ , pivoted to the frame B and joined at their outer ends by the connecting-rod  $j^2$ , the lever-bases each bearing a feed-lever,  $i$ , with one end having a hook,  $i^2$ , adapted to engage a ratchet-wheel on the respective ribbon-reel, and its other end engaging a branch of the detent-lever  $e$ , whereby when one of the feed-levers is in operative engagement with a ribbon-reel the opposite lever is thrown out of engagement with the opposite wheel, all substantially as described.

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Witnesses:

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