(No Model.)

W. P. KIDDER.

KEY ACTION FOR TYPE WRITING MACHINES.

No. 567,241. Patented Sept. 8, 1896.

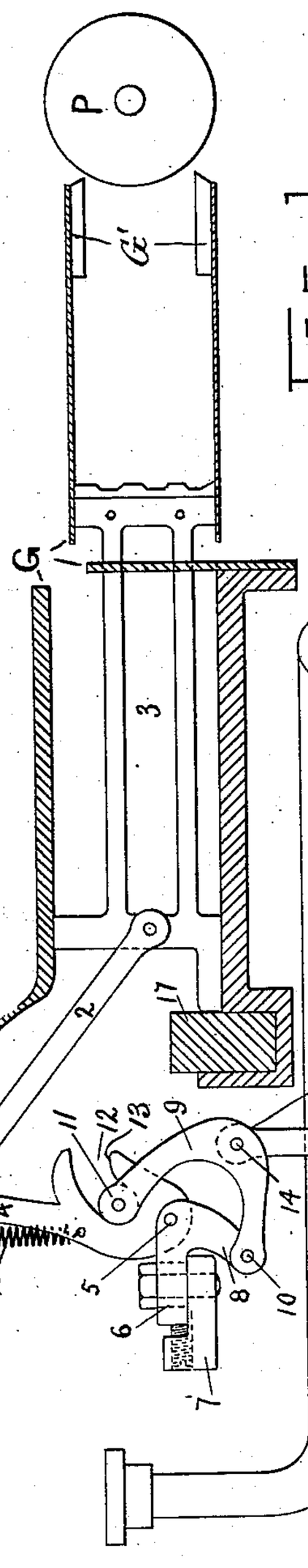

FIG. 1.

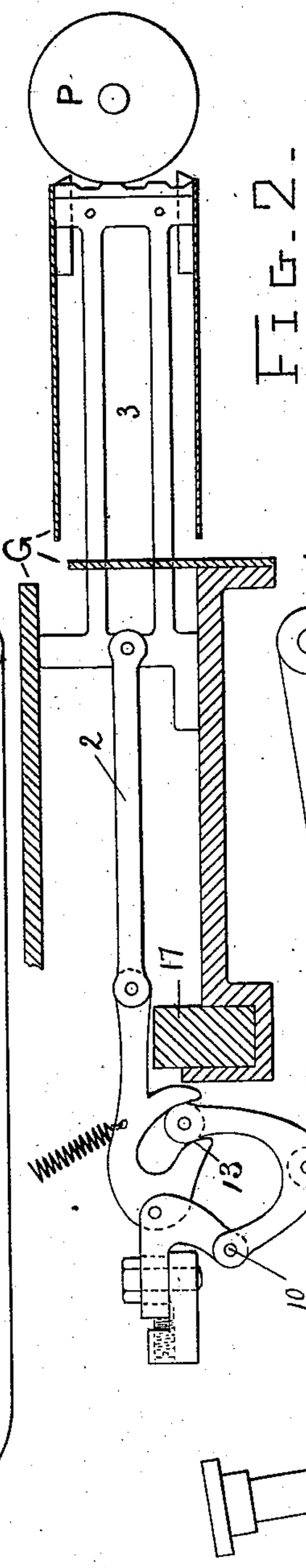

FIG. 2.

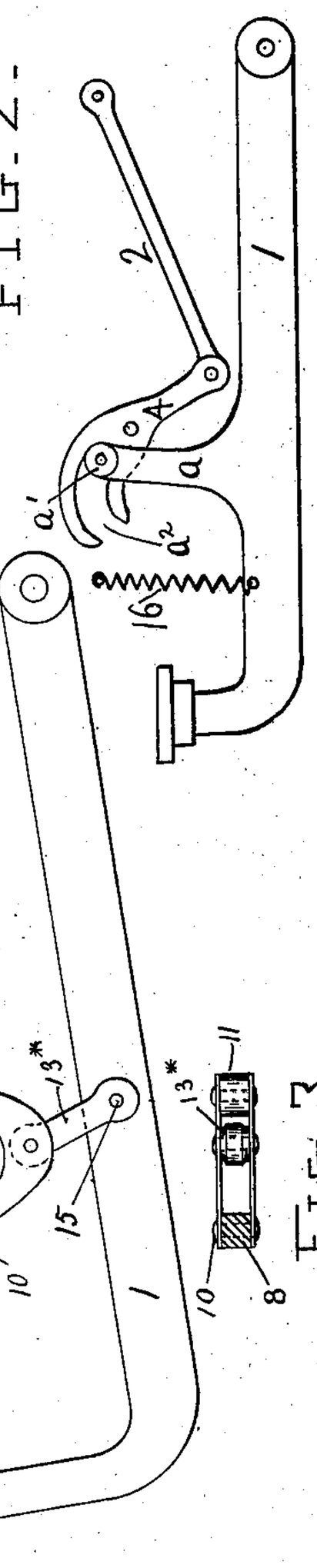

FIG. 4.

FIG. 3.

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KEY-ACTION FOR TYPE-WRITING MACHINES.

SPECIFICATION forming part of Letters Patent No. 567,241, dated September 8, 1896.

Application filed June 12, 1894. Renewed January 31, 1896. Serial No. 577,633. (No model.)

To all whom it may concern:

Be it known that I, WELLINGTON PARKER KIDDER, of Boston, in the county of Suffolk and State of Massachusetts, have invented a new and useful Improvement in Key-Actions for Type-Writing Machines, of which the following is a specification, reference being had to the accompanying drawings, in which—

Figure 1 is a side elevation illustrating my new key-action, the parts being in their position of rest. Fig. 2 is a similar elevation showing the key depressed and type at impression-point. Fig. 3 is a plan of a swinging arm forming a portion of my new action. Fig. 4 shows a modification.

The object of my invention is to produce a key-action suitable for embodiment in type-writing machines which are comparatively noiseless in operation.

In the drawings, 1 represents a key, and 2 a link connecting the end-thrust type-bar 3 with the swinging lever 4, which is pivoted at 5 to a bracket 6, secured on frame 7. Bracket 6 is provided with an extension 8, to which cam-roll carrier 9 is pivoted at 10. Carrier 9 is provided with a cam-roll 11, moving in the cam-path 12, with which lever 4 is provided. A portion 13 of the cam-path is on a radius with the center 10, in which position the toggle is exactly on the centers. (See Fig. 2.) A link 13* connects the cam-carrier 9 with the key-lever 1, being pinned to the carrier 9 and key-lever 1 at 14 and 15, respectively. A returning-spring 16 is interposed between swinging lever 4 and the frame of the machine in any suitable manner, as will be plain to all skilled in the art without more particular description.

Any suitable arrangement of platen P and type-bar guides G may be employed, but it is of the greatest importance that portion G′ of the guide should be of such construction that the type-carrier is compelled to move immediately prior to actual impression straight toward the platen, and that the type-carrier be held unwaveringly at its type end during actual impression.

When the key-lever is depressed, swinging arm 9 pulls upon swinging lever 4 against tension spring 16 and cam-roll 11 is caused to traverse cam-path 12 into the position shown in Fig. 2, at which time the toggle is on its centers, the link 2 thus pushing the endwise-moving type-bar into its printing position. The parts are returned to position by spring 16, the heel of the type-bar striking against a soft pad 17 on its return. The marked advantages of this movement are that the toggle is brought on its centers with multiplied power as the cam-roll traverses the inclined plane of its cam-path; that the toggle is brought positively to its exact centers without the concussion of any part with a stop; that as the toggle approaches its centers the velocity is gradually diminished until the parts reach a full stop—that is, until the type-bar reaches the impression-point, so that the type are brought to the paper practically without any noise whatever.

My invention may be embodied in type-writing machines of many different constructions, but I have herein shown it in connection with an end-thrust type-bar.

In Fig. 4, showing a modification, the key-lever is provided with an arm a, provided with a cam-roll a', which works in a camway a^2, formed in the swinging lever 4, which is pivoted in any suitable manner.

The invention above set forth is an improvement on that described in my pending application, Serial No. 508,614, filed April 23, 1894. In that case I set forth a key-action wherein the type-head is pushed to impression while the toggle is straightening without the use of the cam herein mentioned.

What I claim is—

1. In a type-writing machine, the combination of a platen; a type-carrier; a key for straightening the toggle; a toggle connected with the type-carrier and, while straightening, pushing the type to impression; cam mechanism connecting the toggle and key, whereby movement of the key causes the cam mechanism to bring the toggle substantially on its pivots, the pivots of the toggle being substantially in one and the same line with each other at the instant of impression to print by pressure without concussion, all substantially as and for the purpose set forth.

2. In a type-writing machine, the combina-

tion of a platen; a type-carrier; a key for straightening the toggle; a toggle connected with the type-carrier and, while straightening, pushing the type to impression; cam mechanism connecting the toggle and key whereby movement of the key causes the cam mechanism to bring the toggle substantially on its pivots; and a type-carrier guide which compels the type-carrier to move straight against the platen immediately preceding impression and which holds the type positively at the impression, the pivots of the toggle being substantially in one and the same line with each other at the instant of impression to print by pressure without concussion, all substantially as and for the purpose set forth.

3. In a type-writing machine, the combination of a platen; a type-carrier; a toggle for pushing the type-carrier at the impression-point; and a key for straightening the toggle, with a cam-operating mechanism controlled by movement of the key, the cam mechanism being operative to straighten the toggle, the pivots of the toggle being substantially in one and the same line with each other at the instant of impression, to print by pressure without concussion, substantially as and for the purpose set forth.

4. In a type-writing machine, the combination of a type-carrier; a platen; a key; a toggle and cam mechanism, the toggle straightening on its pivots by movement of the key, through the instrumentality of the cam mechanism when impression is given, the pivots of the toggle being substantially in one and the same line with each other at the instant of impression to print by pressure without concussion, substantially as set forth.

5. In a type-writing machine, the combination of a platen; a type-bar; and a key-lever, with an intermediate toggle, one member of which pushes the type-bar, the cam operating directly on the toggle to straighten it, and being connected with the type-lever, the pivots of the toggle being substantially in one and the same line with each other, at the instant of impression, to print by pressure without concussion, substantially as and for the purpose set forth.

6. In a type-writing machine, the combination of a platen; a type-bar guide; a type-bar; a toggle, one member of which is pivoted to the type-bar, and a second member of which is pivoted to the machine, and provided with a cam-path; a cam-roll working in the cam-path; a swinging carrier for the cam-roll; a link connecting the cam-roll carrier with a key-lever; and a key-lever, substantially as and for the purpose set forth.

7. In a type-writing machine, the combination of a platen; a type-bar guide; a type-bar, and a key-lever with an intermediate toggle mechanism for pushing the type-carrier at impression, the toggle being provided with a cam-path; a swinging cam-roll carrier having a cam-roll working in said path, the swinging cam-roll carrier actuated by the movement of the key to straighten the toggle; the cam-path being so formed that, when the pivots of the toggle are brought into substantially the same line with each other, the velocity of the type-bar is gradually diminished until the type-bar reaches the impression-point so that the type are brought to the paper without concussion, substantially as and for the purpose set forth.

8. In a type-writing machine, the combination of a platen; a type-bar guide; an endwise-moving type-bar; a toggle, one member of which is pivoted to the endwise-moving type-bar, and the second member of which is provided with a cam-path and pivoted in the machine; a swinging cam-roll carrier provided with a cam-roll; a link connecting the swinging cam-roll carrier with a key; and a key; the cam-path having a part struck on the radius of a circle from the pivotal point of the swinging cam-roll carrier, all so arranged that, when the pivots of the toggle are brought into substantially the same line with each other, by movement of a key, the cam-roll is on that part of the cam-path which is struck from the pivotal point of the cam-roll carrier as a center, substantially as and for the purpose set forth.

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