

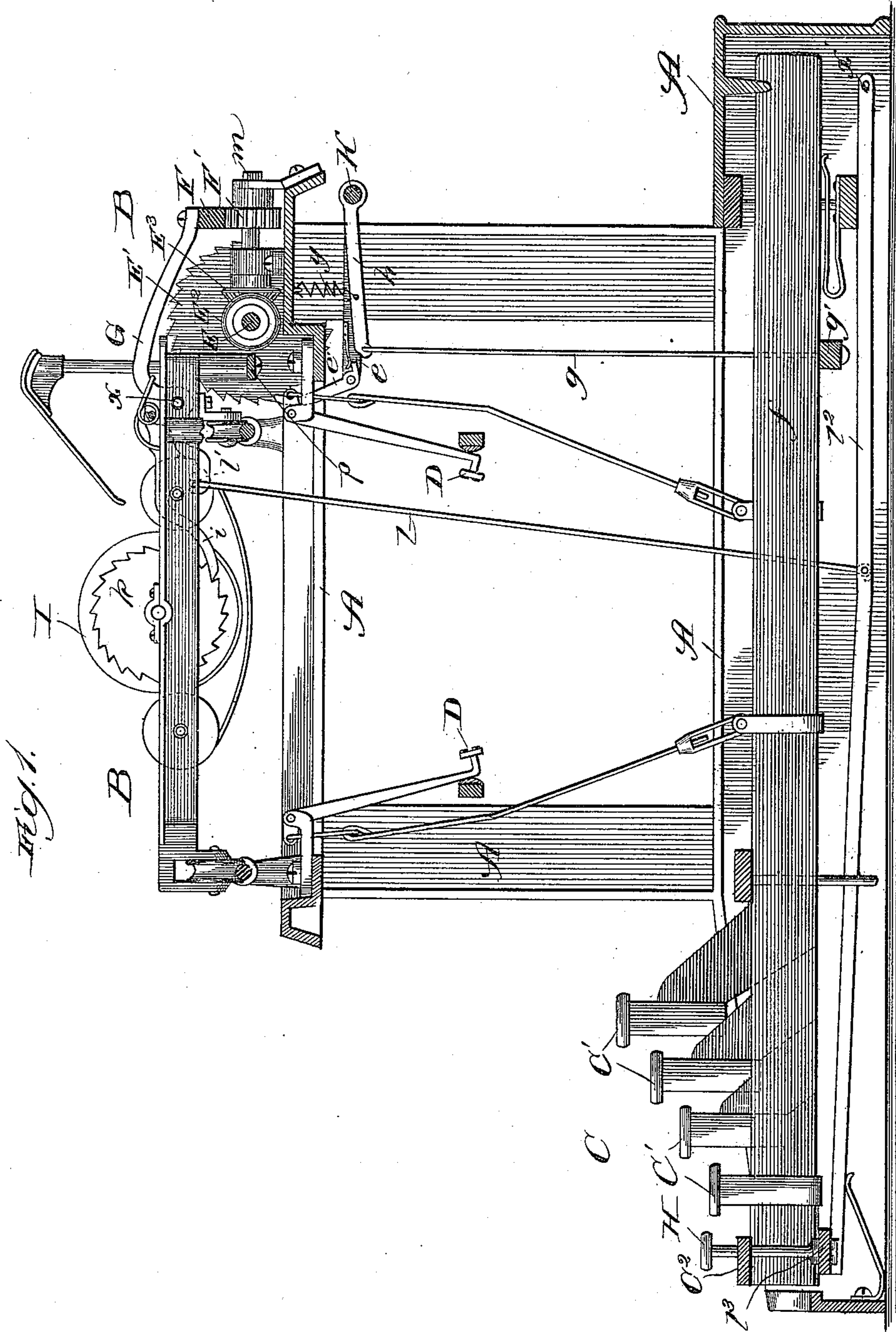
(No Model.)

2 Sheets—Sheet 1.

J. HOULEHAN.  
TYPE WRITING MACHINE.

No. 442,583.

Patented Dec. 9, 1890.



Witnesses:  
E. C. Taylor,  
J. A. Dyrenforth.

Inventor:  
James Houlehan,  
By Dyrenforth & Dyrenforth,  
Attys.

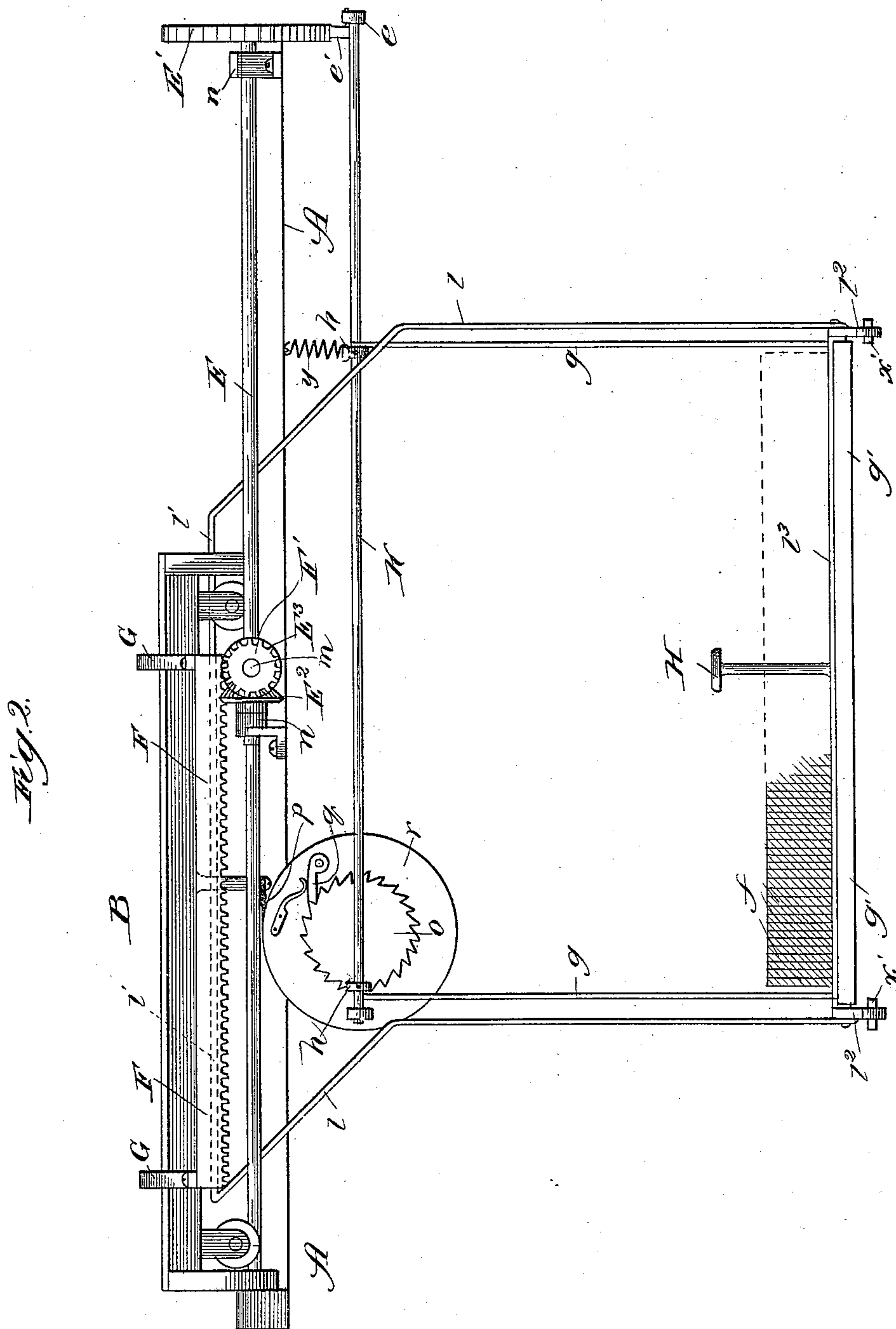
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# UNITED STATES PATENT OFFICE.

JAMES HOULEHAN, OF CHICAGO, ILLINOIS.

## TYPE-WRITING MACHINE.

SPECIFICATION forming part of Letters Patent No. 442,583, dated December 9, 1890.

Application filed March 10, 1890. Serial No. 343,302. (No model.)

*To all whom it may concern:*

Be it known that I, JAMES HOULEHAN, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Type-Writing Machines, of which the following is a specification.

My improvement relates, particularly stated, to the carriage movement in a type-writing machine of the kind in which provision is made for returning the carriage to its initial position without requiring it to be moved back by hand.

In the accompanying drawings, Figure 1 is a central sectional view of a type-writing machine provided with my improvement, and Fig. 2 a view of the same in the nature of a diagram regarding the machine from its rear side.

A is the frame, B the carriage, and C the key-board from which are controlled the types D, all of which and parts commonly connected with them may involve the usual construction and manner of operation, and need not therefore be described in detail in the present application.

To apply my improvement I reverse the operation of the spring commonly serving by its resilience, in a type-writing machine adapted to have its carriage returned by hand, to move the carriage from its initial position as the keys are manipulated, and cause it instead to be set by such movement of the carriage, which is then accomplished by certain positively-acting mechanism actuated from the key-board, whereby the return of the carriage is produced by the resilience of the spring so set when it is released by manipulating a key, which, for convenience, should be at or in close proximity to the key-board.

On the frame, near the side of the machine at which the carriage is in its normal or initial position, is secured a case *r* for the spring. (Not shown, as it may be like that ordinarily employed on type-writers for controlling the carriage.) The spring is connected with the carriage, as shown, by a band *p*, and is controlled by a spring-dog *q*, the spring of which is of greater tension than that in the case *r*, engaging a ratchet-wheel *o*, suitably connected with the confined spring to cause the latter

to be set or wound by being held through the engagement of the dog with the ratchet when the movement of the carriage draws upon the band *p* to compress the spring.

E is a rotary shaft, suitably journaled on the frame A in brackets *n*, and carrying at its outer end a ratchet-wheel E' and at its inner end a beveled gear-wheel E<sup>2</sup>. On a rotary shaft *m*, supported, preferably, at the center of the machine on the frame to extend from the rear toward the front of the latter, are a beveled gear-wheel E<sup>3</sup>, meshing with the wheel E<sup>2</sup>, and a pinion F', meshing with the yielding rack F, hereinafter described. The rack F is supported near its opposite ends at the extremities of two suitably-bent levers G, fulcrumed at *x*, respectively, to the opposite inner sides of the carriage-frame, and extended thence, as or substantially as indicated, to engage near their free ends with the cross-bar *l'* of a link *l*, having its opposite downward projecting ends pivoted to levers *l*<sup>2</sup> between their fulcrums *x'* and ends, which extend to or nearly to the plane of the key-board, at which they are connected by a cross-bar *l*<sup>3</sup>, supporting at its center the key H.

I is the feed-roller, journaled, as usual, in the carriage-frame, and provided at one end with a ratchet-wheel *k*, engaged by a spring-dog *i*, pivotally connected, as shown, with the adjacent lever G, whereby when the free end of the latter is depressed in the manner hereinafter described it causes the dog, by its engagement with the ratchet *k*, to turn the latter the extent of one tooth, and thereby turn the roller I to feed and space the paper.

At the rear side of the machine is a rock-shaft K, suitably supported, and having projecting from it, in a forward direction from near its opposite ends, fingers *h*, which may be yieldingly sustained from the frame A by springs *y*, and which are connected through the rods *g* with the cross-bar *g'*, extending, as usual, transversely across the bases of the system of key-levers *f*. An arm *e* extends from the rock-shaft in the plane of the ratchet-wheel E', and has pivoted to its forward or inner end a spring-dog *e'*, engaging with the said ratchet-wheel.

The operation of the machine provided with my improvement, involving the means de-



scribed, is as follows: Manipulation of an ordinary key  $C'$  in the usual manner, or of the commonly-provided spacer-bar  $C^2$ , causes the lever  $f$  thereof, through the medium of the cross-bar  $g'$ , rods  $g$ , and fingers  $h$ , to turn the rock-shaft  $k$ , and thus also depress the bar  $e$ , carrying the dog  $e'$ , to retract the latter into engagement with a tooth of the ratchet  $E'$ . On releasing the key or spacer-bar, when it returns, as usual, to its normal position, it permits the springs controlling the rock-shaft  $K$  likewise to return it, and thereby move the bar  $e$  in a direction to cause the dog  $e'$  it supports to turn the ratchet  $E'$  the extent of one tooth. This revolves the shaft  $E$  and gear  $E^2$ , thereby also revolving the shaft  $m$  through the gear  $E^3$  and the pinion  $F'$ , the engagement of which with the rack  $F$  moves the carriage  $B$  one space. When in writing the carriage has been moved to the extreme position, (which may be indicated in the usual manner, as by means of the bell commonly employed for the purpose,) it may be returned to its initial position on depressing the key  $H$ . The effect of this is to draw downward upon the levers  $G$  through the link  $l$ , and besides thereby actuating the dog  $i$  to move the feed-roller  $I$  around the extent of one tooth of the ratchet  $k$  to space the paper, to lift the rack  $F$  from its engagement with the cog-wheel  $F'$ , thereby freeing the spring inclosed in the case  $r$ , and which has been set by the described movement of the carriage to act by its resilience and draw the carriage back to its initial position.

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

1. In a type-writing machine, the combination, with the carriage  $B$  and roller  $I$ , having a ratchet  $k$ , of a spring connected with and set by the advancing movement of the carriage, a rack  $F$ , pivotally supported on the carriage, to be moved through a vertical plane, and having connected with it a dog  $i$ , engaging the ratchet  $k$ , a pinion  $F'$ , engaging the rack and rotated through the medium of suitable intermediate mechanism from the key-

board, and a key on a lever  $l^2$ , connected with the pivotal rack, whereby manipulating the said key causes the dog  $i$  to turn the wheel  $I$  and raises the rack from the engagement of the pinion, thus releasing the carriage to permit retraction thereof by the resilience of its controlling-spring, substantially as described.

2. In a type-writing machine, the combination, with the carriage  $B$  and roller  $I$ , having a ratchet  $k$ , of a spring connected with and set by the advancing movement of the carriage, a rack  $F$ , secured to levers  $G$ , fulcrumed on the carriage-frame, a spring-dog  $i$ , connected with the free end of an adjacent lever  $G$  to engage the ratchet  $k$ , a pinion  $F'$ , engaging the rack and rotated through the medium of suitable intermediate mechanism from the key-board, a link  $l$ , having its cross-bar  $l'$  connected with the free ends of the levers  $G$ , levers  $l^2$ , to which the links  $l$  are pivoted at their lower ends, and a cross-bar  $l^3$ , connecting the levers  $l^2$ , the whole being constructed and arranged to operate substantially as described.

3. In a type-writing machine, the combination, with the carriage  $B$  and roller  $I$ , having a ratchet  $k$ , of a spring connected with and set by the advancing movement of the carriage, a rack  $F$ , secured to levers  $G$ , fulcrumed on the carriage-frame, a spring-dog  $i$ , connected with the free end of an adjacent lever  $G$  to engage the ratchet  $k$ , a rotary shaft  $m$ , carrying a pinion  $F'$  to engage the rack, and a beveled gear  $E^3$ , a rotary shaft  $E$ , carrying a beveled gear  $E^2$ , meshing with the gear  $E^3$ , and a ratchet  $E'$ , a rock-shaft  $K$ , carrying a spring-dog engaging the ratchet  $E'$ , the rock-shaft being connected with and actuated from the key-lever system, and levers  $l^2$ , linked to the levers  $G$  near their free ends and extended at their free ends to and connected at the key-board, the whole being constructed and arranged to operate substantially as described.

JAMES HOULEHAN.

In presence of—

J. W. DYRENFORTH,  
M. J. FROST.