

No. 627,141.

Patented June 20, 1899.

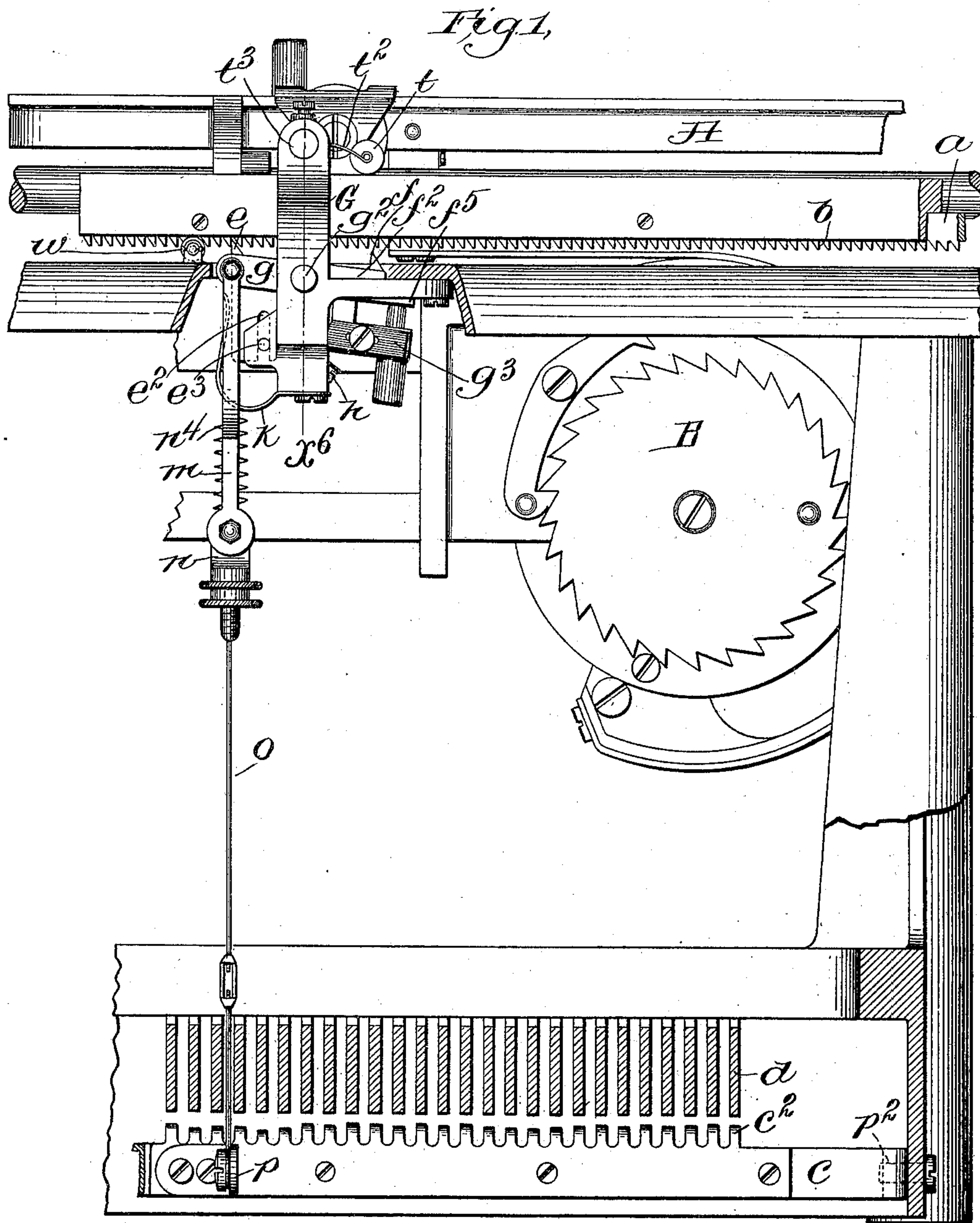
J. B. PRICE.

TYPE WRITING MACHINE.

(Application filed Oct. 24, 1898.)

(No Model.)

2 Sheets—Sheet 1.



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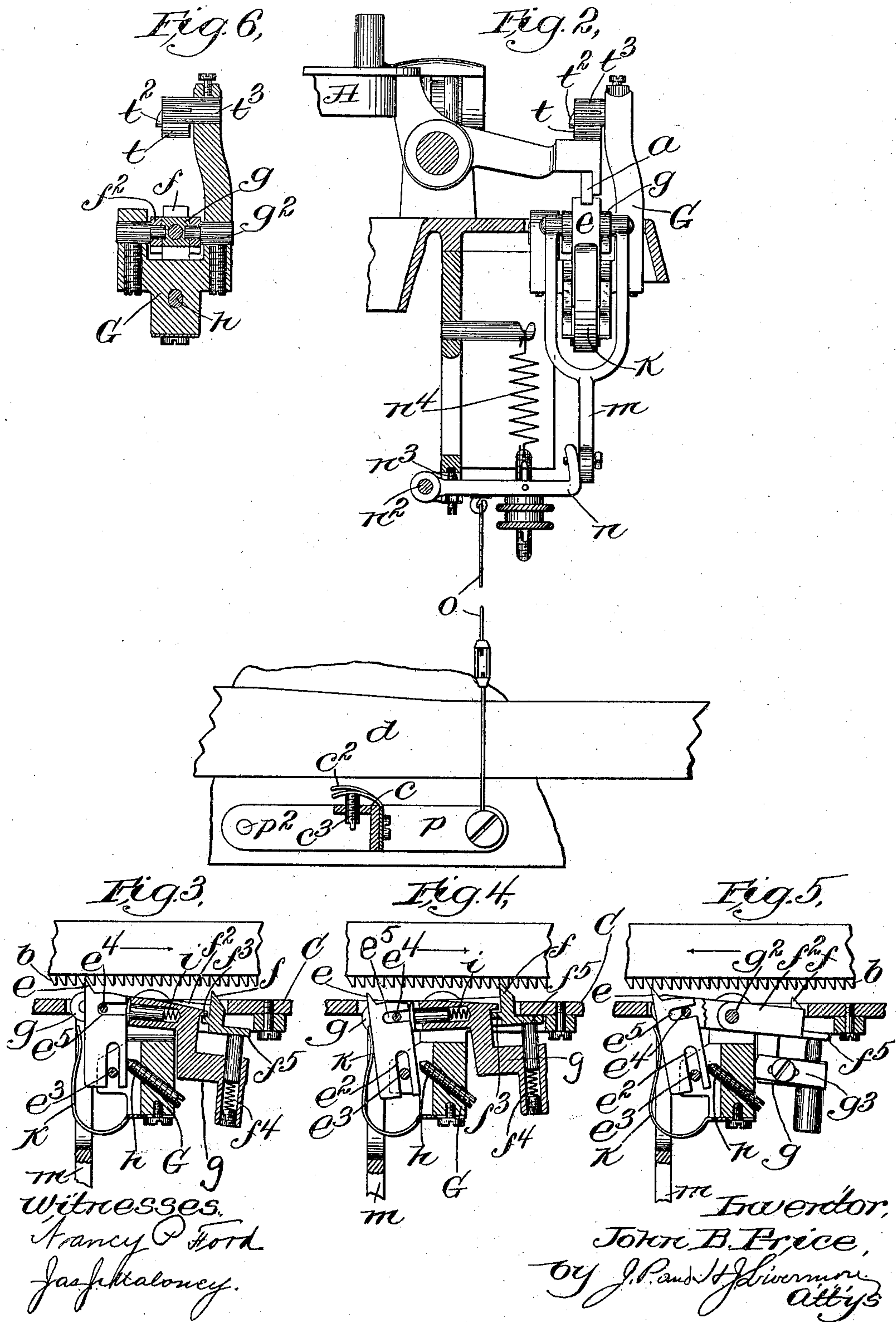
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2 Sheets—Sheet 2.



UNITED STATES PATENT OFFICE.

JOHN B. PRICE, OF NEWARK, NEW JERSEY, ASSIGNOR TO THE MANHATTAN TYPEWRITER COMPANY, OF NEW JERSEY.

TYPE-WRITING MACHINE.

SPECIFICATION forming part of Letters Patent No. 627,141, dated June 20, 1899.

Application filed October 24, 1898. Serial No. 694,476. (No model.)

To all whom it may concern:

Be it known that I, JOHN B. PRICE, of Newark, county of Essex, and State of New Jersey, have invented an Improvement in Type-
5 Writing Machines, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

My invention is embodied in a type-writer,
10 and relates to the letter-space-feed mechanism.

The invention consists in a novel construction of the escapement by which the spring-impelled carriage is permitted to advance as each letter is printed and in the spaces between the words; and it further consists in
15 details of construction that will be hereinafter described.

Figure 1 is a rear elevation of a sufficient portion of a type-writing machine to illustrate this invention; Fig. 2, a transverse section thereof, showing the feed mechanism in
20 side elevation; Figs. 3, 4, and 5, sectional elevations as seen from the rear of the machine, showing the escapement mechanism in different positions; and Fig. 6, a sectional detail on line x^6 , Fig. 1.

The escapement mechanism forming the subject of this invention is applicable to machines of the well-known Remington type,
30 being embodied in a machine in which the platen-carriage A or part that supports and feeds the paper is provided with a feed-rack a , having inclined or ratchet-shaped teeth b , spaced to correspond to the spacing desired
35 between consecutive letters of continuous printing. The said carriage is normally impelled in the direction from left to right, as seen in Fig. 1, by the mainspring and connections, which may be of usual construction,
40 as indicated at B, Fig. 1, and said carriage is permitted to advance a distance represented by one tooth of the feed-rack a at each operation of the universal bar c , produced by depression of any of the letter-key levers d
45 or of the space-key in the usual manner.

Instead of controlling the movement of the rack a by a pair of feed-dogs movable in a plane transverse to said feed-rack, as is more commonly done in machines of this class, said
50 feed-rack is, in accordance with the present

invention, controlled by a pair of feed-dogs $e f$, having a movement in the same plane as the feed-rack, the said dog f being moved only in the direction to engage and disengage with the teeth of the feed-rack, while the dog e
55 has a movement into and out of engagement with said teeth and also a movement in the direction of the length of the rack.

The dog f , which for distinction will be called the "retaining-dog," is carried by one
60 arm of a rocking lever g , pivoted at g^2 upon a stationary part of the frame, shown as a bracket G, below the rack a , said lever g being operated from the universal bar c by connections that will be hereinafter described, and being
65 turned upon its pivotal axis, which is at right angles to the length of the rack, in the direction to raise the dog f into engagement with the teeth of the rack a when the universal bar is depressed by the type-keys or
70 space-key of the machine, and being moved in the opposite direction, or down and out from engagement with the said teeth, when the universal bar is permitted to rise to its normal position assumed when none of the
75 keys of the machine are depressed. The other dog e , which for distinction will be called the "let-off" dog, is controlled at the lower end of its shank or carrier by a guide which permits of movement of said dog up and down
80 or toward and from the teeth of the rack a , and also permits of a pivotal movement of said dog about an axis near its lower end, so that its upper end may move in the direction of the length of the rack a . As shown in this
85 instance, the lower portion of said dog e is provided with a longitudinal slot e^2 , (best shown in Figs. 3, 4, and 5,) engaging with a pin or projection e^3 on the stationary framework or bracket G, which pin serves, in con-
90 nection with said slot, to guide the dog in its longitudinal or upward-and-downward movement, and also constitutes a pivot or fulcrum for its pivotal movement. Said dog e is also controlled near its upper end by the lever g ,
95 one arm of which carries the retaining-dog f , the other arm of said lever being, as shown in this instance, provided with a transverse pin or projection e^4 , passing through a slot e^5 in the shank or carrier of the dog e , said pin
100

e^4 by its engagement thus causing an up-and-down movement of the said dog, the reverse of that of the dog f , when the lever g is vibrated, and also permitting of the pivotal movement of said dog e about the guide projection e^3 as a center. The said pivotal movement of the dog e in the direction of the feed of the carriage A is limited by an adjustable front stop h , shown as a set-screw in the stationary bracket G , and said dog is normally yieldingly pressed in the direction opposite to that of the feed movement of the rack by a spring i , (see Figs. 3 and 4,) its movement under the action of said spring i being limited by a rear stop k , which is adjustable and also is yielding for a purpose that will be hereinafter explained.

In order to provide for slight variations in the amount of movement of the dog-operating lever g without correspondingly varying the engagement of the retaining-dog f with the teeth of the rack, the said retaining-dog is yieldingly connected with the lever g , being carried by an arm f^2 , which, as herein shown, is supported upon the same pivot or fulcrum g^2 as the lever g , being capable of independent pivotal movement thereon. The movement of said dog f with relation to the lever g in the direction for entering the rack-teeth is limited by a stop projection f^3 , (shown in Figs. 3 and 4,) which engages with a corresponding projection or overhanging portion of the lever g , said dog f being normally retained with the stop f^3 in engagement by a spring f^4 , (see Figs. 3 and 4,) so that when the lever g is rocked from the position shown in Fig. 3 to that shown in Fig. 4 the dog f accompanies the same as long as its movement is not otherwise interfered with. The movement of the dog toward the rack, however, is limited by a stop projection f^5 , which engages with the stationary framework of the machine, being shown in this instance as striking upon the overhanging portion of the machine-frame or bed-plate C . The movement of the dog f into engagement with the teeth of the rack a is thus arrested when proper engagement is effected, and if the lever g requires a further movement by reason of variations in the movement of the operating-keys or in the connections from said keys to said lever such movement will be accommodated by the yielding connection between the dog and lever without producing a further upward movement of the dog or a deeper engagement thereof with the rack-teeth, the spring f^4 yielding to provide for such further movement of the lever g as may take place. The return movement of the lever g and dogs carried by it from the position shown in Fig. 4 to the normal position shown in Fig. 3 is limited by a stop g^3 , (see Figs. 1 and 5,) adjustably connected with said lever and engaging with the bracket G .

The mode of operation of the dogs controlling the feed of the carriage is as follows: Normally the lever g is in the position shown

in Fig. 3, with the retaining-dog f out of engagement with the teeth of the rack a , and the let-off dog e , engaged with a tooth of said rack and held against the front stop h by the impelling force applied by the main impelling-spring to the carriage, which force overcomes the spring i . When a key is depressed, the lever g is rocked upon the pivot g^2 to approximately the position shown in Fig. 4, raising the retaining-dog f into engagement with the tooth of the rack which is then nearest to it and depressing the dog e out from engagement with the tooth before engaged by it, the parts thus coming to the position shown in Fig. 4, and the carriage being released by the dog e , but retained by the dog f , said dog e when disengaged from the rack being thrown by the spring i against the rear stop k and past the end of the tooth previously held by it. The carriage is thus positively held by the dog f at the time when the imprint is being made. When the key, by the depression of which the movements above described were produced, is released and returned to its normal position, the lever g is rocked back to its original or normal position, and the dog e engages with the next tooth of the rack to the one previously engaged by it, permitting the carriage to feed until the said dog brings up against the stop h with the carriage advanced one tooth of the rack from the position occupied previous to the depression of the key.

The dog-operating lever g is connected by a link m with a lever n , pivoted at n^2 , Fig. 2, on a stationary part of the frame and provided with a stop n^3 to limit its upward movement, said lever being normally retained in its uppermost position by a spring n^4 , and thus retaining the dogs in the normal position. (Shown in Figs. 1 and 3.) The said lever n is connected by a link o with a lever or arm p of a frame pivoted at p^2 on the main frame of the machine and carrying the universal bar c , which is acted upon by the spacing and printing keys of the machine.

It is found necessary in machines of this class to vary or adjust the effect of each of the key-levers d upon the universal bar c , since when the said keys are properly adjusted with reference to the type-bar connections they are frequently found to be out of proper adjustment with relation to the universal bar. It has been necessary, therefore, as a general thing to cut away portions of certain keys that engage the universal bar when they are found to depress the bar too far or to introduce additional material between a given key and universal bar when it is found that such key does not depress the bar far enough.

In order to provide for the proper adjustment of the keys with relation to the universal bar, the latter is in accordance with this invention provided with a series of yielding fingers c^2 , shown as cut somewhat like the teeth of a comb from a strip of sheet metal, one corresponding to each key, and beneath the said fingers the bar is provided with ad-

justing-screws c^3 , one corresponding to each finger of the series. Thus by turning up or down the corresponding adjusting-screw the effect of any key upon the universal bar may be adjusted as desired, and the spring-finger which bears upon and is raised or lowered by the adjusting-screw affords a suitable surface for the key-lever to bear upon without danger of becoming worn or indented, as it would if bearing directly upon the end of the adjusting-screw.

The rack a may be lifted wholly out of engagement with the feed-dogs, when desired, in order to permit movement of the carriage in either direction independent of the feed in the usual manner, and it is shown as provided with a yielding pressure t (see Figs. 1 and 2) to prevent accidental rising movement in the normal operation of the machine. Said presser is shown as a roller supported in a spring-arm t^2 , mounted in a pin or stud t^3 , adjustably secured in a socket in the bracket G, said stud t^3 constituting a positive stop to limit the upward movement of the rack.

A support w , Fig. 1, is provided for the rack to limit its downward movement, said support being shown as an antifriction-roller engaging the rack-carrier near the feed-dogs, as shown, so as to accurately determine the vertical position of the feed-rack in the operation of the machine, as is requisite in the construction in which the feed-dogs cooperate with the rack by movement into and out from engagement with the teeth in the direction toward and from the under edge of the rack.

When the carriage is forcibly moved backward in the direction opposite to the feed, the let-off dog e yields, as shown in Fig. 5, its rear stop k yielding to permit such movement, so that the teeth of the rack a may ratchet back over the dog e without necessarily vibrating the dog-carrying lever g .

The herein-described escapement is very rapid in operation and may be adjusted to let off the carriage according to the requirements of the operator, allowing some movement to take place, if desired, upon the depression of the key and the remainder as the key rises, or, if preferred, causing substantially the whole movement of the carrier to take place in the rising of the key after the imprint has been made. This partial feed motion depends upon the relation of the dog to the teeth—as, for instance, the retaining-dog f may engage its tooth substantially as the let-off dog e leaves its tooth, or there may be lost motion, so that the carriage will travel slightly after the let-off dog releases it before it brings up on the retaining-dog.

I claim—

1. The combination of the spring-impelled carriage provided with a feed-rack, with a dog-operating lever provided with a retaining-dog, and a let-off dog made as a separate structure from the retaining-dog and having a guide upon the fixed frame upon which the said dog

is longitudinally and pivotally movable, and an engaging connection between said let-off dog and the dog-operating lever, substantially as described.

2. The combination of the feed-rack, with a dog-operating lever and retaining-dog carried by one arm thereof, a let-off dog made as a separate structure from the retaining-dog and having a guide upon the fixed frame upon which it is longitudinally and pivotally movable, and an engaging connection between said let-off dog and the other arm of the dog-operating lever, and stops limiting the pivotal movement of said let-off dog, substantially as described.

3. The combination of the feed-rack, with a dog-operating lever provided with a retaining-dog, a let-off dog having a guide upon the fixed frame upon which it is longitudinally and pivotally movable, and an engaging connection between said let-off dog and the dog-operating lever, and a rigid front stop, and yielding rear stop governing the pivotal movement of said let-off dog, substantially as and for the purpose described.

4. The combination of the feed-rack, with a dog-operating lever pivoted on an axis substantially at right angles with the length of said feed-rack, and a retaining-dog carried by one arm of said lever, and a let-off dog having a guide connection at one end upon the fixed frame, and a slotted guide connection with said dog-operating lever upon which said let-off dog is movable lengthwise of the rack, front and rear stops for said let-off dog for limiting said movement, and a spring pressing said let-off dog toward the rear stop, substantially as described.

5. The combination of the feed-rack, with a dog-operating lever and dogs operated thereby, a second lever connected by a link with said dog-operating lever and provided with a stop limiting its movement, and a spring normally holding said lever against said stop, and a universal bar connected with said lever, substantially as described.

6. The combination of the feed-rack, with a dog-operating lever and its retaining-dog yieldingly carried by one arm of said lever and movable only into and out of engagement with said rack, a stop to limit the movement of said retaining-dog independently of the movement of the lever, a let-off dog operated by the other arm of said lever and having a movement into and out of engagement with the rack-teeth and also a movement lengthwise of the rack, and means for vibrating said lever to alternately engage said dogs with the rack, substantially as described.

7. The combination of the keys of the typewriter with the universal bar, and a strip provided with a series of yielding engaging fingers secured to said universal bar, one finger corresponding to each key, and means for independently adjusting said fingers, substantially as and for the purpose described.

8. The combination of the feed-rack adapt-

ed to have longitudinal and vertical movements, and the feed-dogs cooperating therewith, with a yielding presser opposing the upward vertical movement of said rack, substantially as and for the purpose described.

9. The combination with the feed-rack adapted to have longitudinal and vertical movements with the feed-dogs cooperating therewith, and movable toward and from the
10 teeth of the rack from below with a support

for the said feed-rack adjacent to said pawls, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JOHN B. PRICE.

Witnesses:

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SAMUEL EPSTEIN.