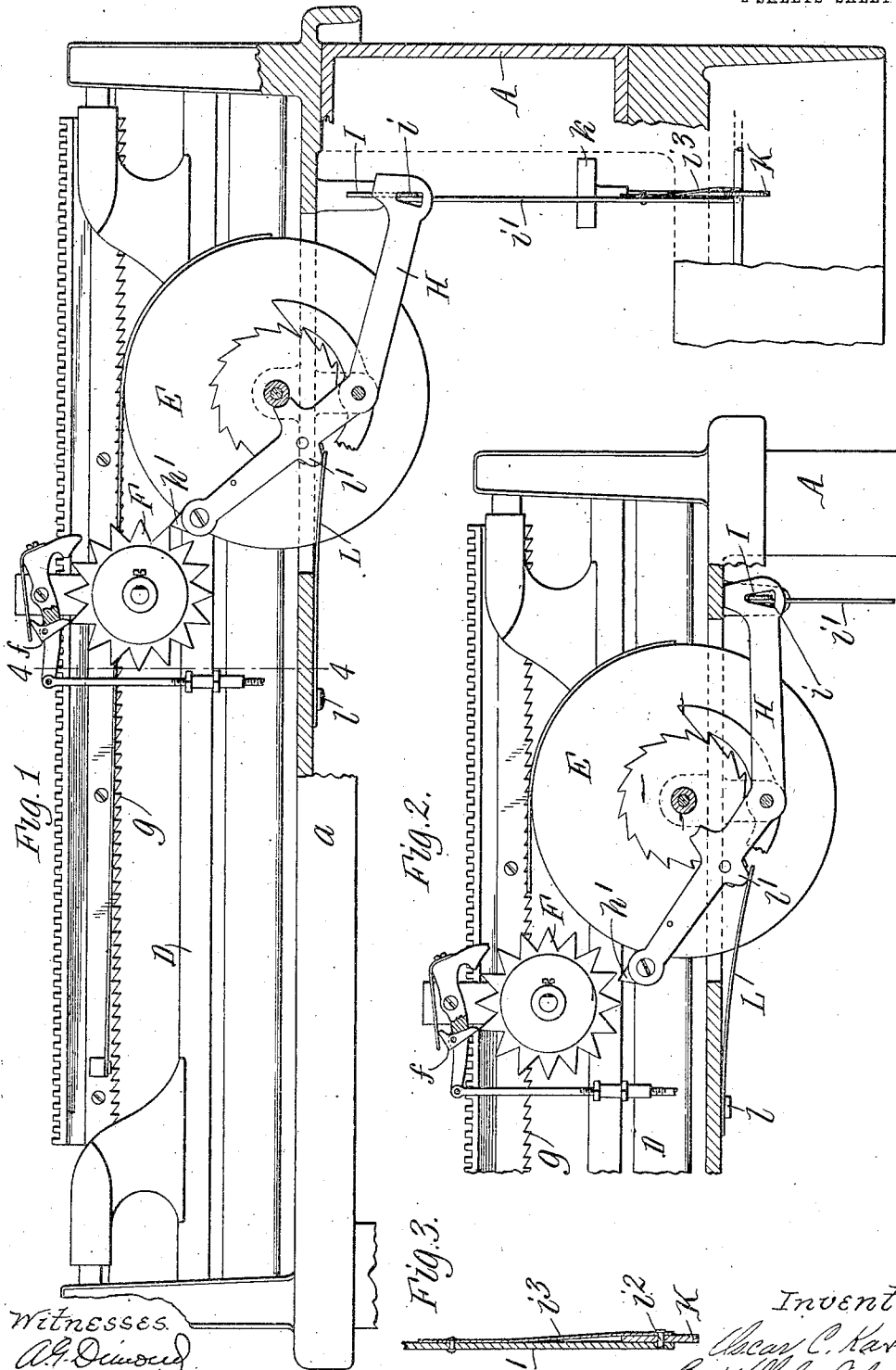


O. C. KAVLE.
CARRIAGE BACKSETTING MECHANISM FOR TYPE WRITERS.
APPLICATION FILED OCT. 7, 1909.

1,060,004.

Patented Apr. 29, 1913.

2 SHEETS—SHEET 1.



Witnesses.
A. G. Dimond
C. H. B. und.

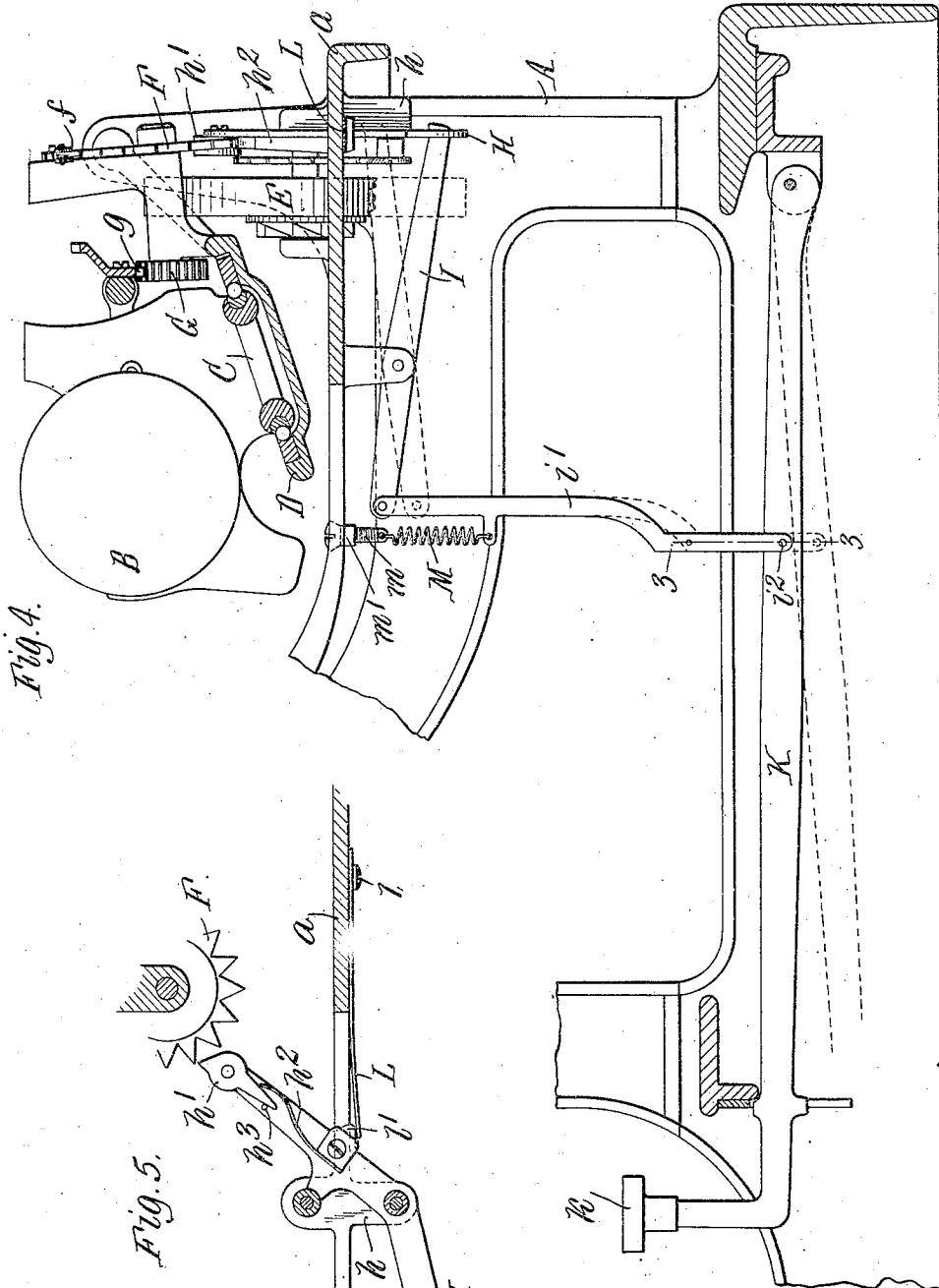
Inventor
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Witnesses.
A. G. Diamond.
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UNITED STATES PATENT OFFICE.

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CARRIAGE-BACKSETTING MECHANISM FOR TYPE-WRITERS.

1,060,004.

Specification of Letters Patent.

Patented Apr. 29, 1913.

Application filed October 7, 1909. Serial No. 521,522.

To all whom it may concern:

Be it known that I, OSCAR C. KAVLE, a citizen of the United States, residing at Syracuse, in the county of Onondaga and State of New York, have invented a new and useful Improvement in Carriage-Back-setting Mechanisms for Type-Writers, of which the following is a specification.

This invention relates to typewriters and analogous machines provided with a carriage which has a step by step movement, and more particularly to improvements in means for moving or setting the carriage back one or more steps or letter spaces.

In the back setting devices heretofore used of which I am aware, it is necessary to exercise care in depressing the actuating finger key in order to prevent the carriage from being set back more than one step or space, that is, a quick actuation of the key will give the carriage momentum enough to cause it to move two or even more than two spaces. Attempts have been made to overcome this defect by providing means intended to lock the carriage or escapement wheel so that it can not be moved more than one space by each depression of the actuating key, but these devices are effective only when the key is fully depressed, and even with such devices it is possible, by a quick partial depression of the key, to give the carriage an impulse which will cause it to move more than the one space desired.

The primary object of this invention is to overcome these objections and produce a mechanism for setting back the carriage a step at a time, which will be positive and certain in action and will positively prevent the carriage from being set back a distance greater than one of its forward step movements at each actuation of the back-setting key, regardless of whether the key is actuated carefully or quickly and without especial care.

Other objects of the invention are to produce a carriage back-setting mechanism which is of simple, inexpensive and durable construction, is easy to operate, and enables the carriage to be quickly set back one or more steps without danger of producing a greater movement thereof than is intended; and also to improve carriage back-setting mechanisms in the respects hereinafter described and set forth in the claims.

These results are attained by providing a

back-setting mechanism in which the manual force exerted in depressing or actuating the back-setting finger key does not act directly to set back the carriage, but places a back-setting pawl or device in position for operation and causes the operation of this device and the setting back of the carriage by a mechanical motor or power device, such, for instance, as a spring or weight, after the finger key has been released and permitted to commence its return movement.

In the accompanying drawings, consisting of two sheets: Figure 1 is a fragmentary rear elevation, partly in section, of a type-writing machine provided with a carriage back-setting mechanism embodying the invention, showing the normal position of the parts. Fig. 2 is a similar view, showing the back-setting lever set in position for operation by its spring to set back the carriage. Fig. 3 is a fragmentary vertical section in line 3—3, Fig. 4. Fig. 4 is a fragmentary longitudinal sectional elevation substantially in line 4—4, Fig. 1. Fig. 5 is a front elevation, partly in section, of the back-setting lever and associated parts.

Like reference characters refer to like parts in the several figures.

A represents the main frame of a type-writing machine, B the paper platen, C the platen carriage, D the pivoted shift frame by which the carriage is shifted to place the platen in printing relation to different sets of type, E the power-operated or spring drum for causing the lateral travel of the carriage, F and f respectively the toothed wheel and cooperating holding dog of the carriage escapement, and G the pinion which is connected to the escapement wheel and meshes with a toothed rack g on the carriage to govern the letter space movements of the carriage. The operation of these parts is well known. They may be of any suitable construction, and will differ in different makes of typewriters.

H represents a pawl lever or device which cooperates with some suitable part (preferably the escapement wheel) connected to the carriage C for setting it back, that is, moving it in a direction opposite to its letter space movements. This lever is connected to a finger key or lever by which it is moved manually in one direction to place it in position to engage and turn the escapement wheel backwardly, and it is moved in the

opposite direction to turn the wheel backwardly, when the finger key is released, by a spring or equivalent power-operated device.

In the construction shown in the drawings, the pawl lever H extends crosswise of the machine at the rear portion thereof, is pivoted on a lug *h* depending from the top plate *a* of the frame, and is provided at one end with a pivoted pawl *h'* which is adapted to engage the teeth of the escapement wheel F. The pawl has a tail that is normally held by a spring *h²* against a stop *h³* on the lever, whereby the pawl is adapted to yield in one direction only. As the escapement wheel is mounted on the shift frame it swings slightly when the platen is shifted. The face of the pawl is therefore made wide enough to engage the wheel in either of its positions. The other end of the pawl lever is provided with a hole *i* in which engages the rear end of an intermediate lever I which extends forwardly beneath and is centrally pivoted to the top plate *a* and is connected at its front end by a link *i'* to an operating or key lever K. The link *i'* preferably has a pin *i²* and spring *i³*, Fig. 3, at its lower end by which it is detachably connected to the key lever. This key lever, which may be connected and mounted similarly to the key levers (not shown) for operating the type-bars, is preferably located at the left-hand side of the machine and provided at its front end with a finger key *k* which is located in the upper or rear bank of keys in the keyboard. L represents a leaf spring which is secured by a screw *l*, or otherwise, to the underside of the top plate and bears at its free end against a lug *l'* on the pawl lever H; and M represents a coil spring which is attached at one end to the link *i'* and at its other end to a screw *m* which is screwed into a nut *m'* seated in a countersunk hole in the top plate, and can be adjusted to regulate the tension of the spring M by turning the nut *m'*.

When it is desired to set back the carriage the finger key *k* is depressed, which acts through the described connections to move the pawl lever H from the normal position shown in Fig. 1 to the position shown in Fig. 2. During this movement of the lever the escapement wheel is held stationary by its dog *f*, and the pawl *h* yields and rides over two teeth of the escapement wheel and assumes the position shown in Fig. 2, in front of the second tooth, ready to engage this tooth and turn the wheel backwardly during the return movement of the lever. The springs L and M are strained by the depression of the finger key, and when the finger key is released these springs raise the finger key and return the pawl lever to their normal positions, and as the pawl is then held rigid with the lever by the

stop *h³*, it engages the tooth of the escapement wheel in rear of it and turns the wheel backwardly, *i. e.*, to the left in Figs. 1 and 2, a distance nearly equal to two tooth spaces, when it passes out of contact with the tooth, leaving the wheel free to move forwardly under the influence of the carriage driving spring, a distance less than one tooth space, or until arrested by the holding dog *f*. The lower end of the pawl lever is adapted to strike the top plate *a* to limit its movement by the key lever, and its return is limited by a lug thereon engaging the hub of the spring drum E. After the parts have returned to their normal positions the escapement wheel will have been forced back and will be held one tooth space from where it was before the key lever was depressed. The wheel is thus moved backwardly more than one tooth space in order to give the holding dog *f* an opportunity to move into holding relation to the tooth next to the one previously engaged by it. When used with an escapement of different construction the pawl may be made to move the wheel either a greater or a less distance as may be required by reason of the construction of the escapement, to set the wheel back one tooth space.

It will be understood from the above that the carriage is set back by the springs L and M and that it does not begin its movement until the key lever is released and permitted to start back to its normal position. The carriage is set back by the power of the springs and not by the manual force applied to the key lever by the operator which sets or places the pawl in position for operation on the escapement wheel by the springs, and strains the springs, or causes them to operate. The springs act alike in all cases, and it makes no difference whether the key be depressed quickly or slowly, or whether or not it be released quickly. All that is required to insure proper action of the mechanism is that the key lever be depressed to its limit. The springs will act quickly if permitted to do so, and they will act slowly if the operator dwells on the key, but in any case they will set the carriage back one, and only one, letter space for each depression of the key lever. The action can be repeated as fast as desired if it be desired to set the carriage back more than one letter space.

The separate adjustable spring M is used to return the key lever, as it is useful in securing the proper action of the back setting pawl when first adjusting the parts, and at any future time when it may be necessary to reinforce the pawl-operating spring L should the latter become weakened. Either the spring L or the spring M could be used alone and made adjustable if desired, but it is preferable to use the two

5 springs and make the lighter one, M, adjustable. One or more springs or a different sort of a motor or power device which operates as described to set back the carriage after the key lever has been actuated, and which operates on the carriage through the escapement wheel or other element, can be used, and the invention is therefore not restricted to the described construction of the back-setting mechanism.

10 I claim as my invention:

1. The combination with a paper carriage having a motor driven step-by-step forward movement, of mechanism for setting back the carriage including a power device by the power of which the carriage is set back a distance equal to one of its forward step movements each time said mechanism is operated; and a manually operable device for causing the operation of said power device, substantially as set forth.

2. The combination with a paper carriage having a motor driven step-by-step forward movement, of mechanism for setting back the carriage including a spring actuated device by the power of which the carriage is set back a distance equal to one of its forward step movements each time said device is actuated, and means operable at will to cause the actuating of said spring actuated device, substantially as set forth.

3. The combination with a paper carriage having a motor-driven step-by-step forward movement, of mechanism for setting back the carriage comprising a spring for moving the carriage, and a key for straining said spring, substantially as set forth.

4. The combination with a paper carriage having a step-by-step forward movement, of mechanism for setting back the carriage comprising a device for moving the carriage, a spring for operating said device to move the carriage backwardly, and a key for placing said device in position for operation and straining said spring, substantially as set forth.

5. The combination with a paper carriage, and mechanism for moving the carriage forwardly step by step, of mechanism for setting back the carriage a step at a time, including a spring by the power of which the carriage is set back, and means operable at will for straining said spring whenever its action is desired, substantially as set forth.

55 6. In a typewriting machine, the combination with a carriage having a step-by-step forward movement, of a spring and mechanism actuated thereby for setting back the carriage, a back-setting finger key located at the key-board, and connections for straining said spring when said key is actuated, said spring and mechanism acting to set back the carriage one step for each actuation of said back-setting key, substantially as set forth.

7. The combination with a paper carriage having a step-by-step forward movement, of a spring, a key for straining said spring, and means which are actuated by said spring to set back the carriage upon the release of said key, substantially as set forth.

8. The combination with a paper carriage having a step-by-step forward movement, of mechanism for setting back the carriage comprising a spring for moving the carriage, an adjustable auxiliary spring which assists said first spring, and means for straining both of said springs, substantially as set forth.

9. The combination with a paper carriage, and mechanism for moving the carriage forwardly step by step including a toothed wheel, of mechanism for turning said toothed wheel backwardly to set back the carriage, comprising a pawl lever, a pawl mounted on said lever to swing in substantially the plane of the toothed wheel and to yield and ride over the teeth of said wheel when the pawl lever is manually moved in one direction and to engage and turn the toothed wheel when the pawl lever is released and is permitted to move in the opposite direction, and power means for swinging said pawl lever in said opposite direction, substantially as set forth.

10. The combination with a paper carriage, and mechanism for moving the carriage forwardly step by step including a toothed wheel, of mechanism for turning said toothed wheel backwardly to set back the carriage, comprising a pawl lever, a pawl mounted on said lever to swing in substantially the plane of the toothed wheel and adapted when moved in one direction to first engage a tooth of said wheel and partially rotate said wheel and then clear said tooth, means for oscillating said pawl lever, and means for limiting the movements of said pawl lever, substantially as set forth.

11. The combination with a paper carriage having a step-by-step forward movement, of mechanism for setting back the carriage comprising a toothed wheel, a pawl normally disengaged from said toothed wheel, manually-operable means for positioning said pawl to engage said toothed wheel, and a spring which is strained by said manually-operable means and acts to move said pawl and turn said toothed wheel a step each time said manually-operable means are actuated, substantially as set forth.

12. The combination with a paper carriage, printing mechanism, and power-driven means controlled by the printing mechanism for producing a step by step forward movement of the carriage, of mechanism for setting back the carriage including a power-actuated device by the power of which the carriage is set back, and a

special finger key which acts when moved manually to store power in said power-actuated device and when released to permit the stored power to actuate said device, substantially as set forth.

13. The combination with a paper carriage, printing mechanism, and power-driven means controlled by the printing mechanism for producing a step by step forward movement of the carriage, of mechanism for setting back the carriage including a back-setting key, and a spring which is strained by the actuation of said key and acts to set back the carriage when said key is released, substantially as set forth.

14. The combination with a paper carriage, printing mechanism, and power

driven means controlled by the printing mechanism for producing a step by step forward movement of the carriage, of mechanism for setting back the carriage including a back-setting key, a spring which is strained by the actuation of said key, and means actuated by said spring when said key is released and operating through said controlled means for setting back the carriage, substantially as set forth.

Witness my hand, this 2nd day of October, 1909.

OSCAR C. KAVLE.

Witnesses:

CHESTER U. REID,
OTTO A. SCHILLY.