N. H. ANDERSON.

TYPE WRITING MACHINE.

APPLICATION FILED AUG. 6, 1913.

1,264,589.

Patented Apr. 30, 1918.

2 SHEETS—SHEET 1.

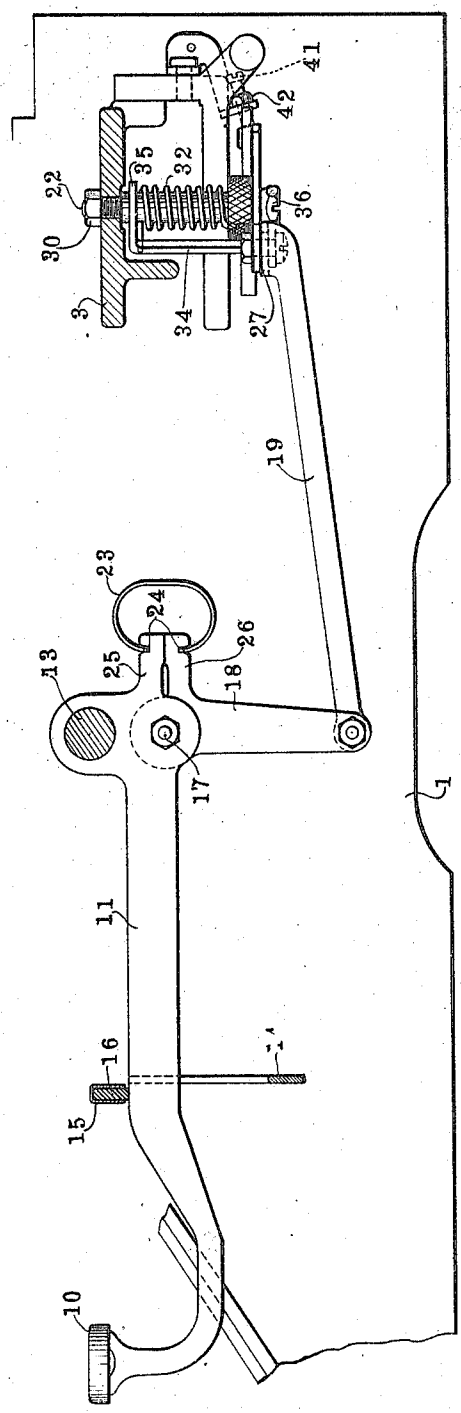


Fig 1.

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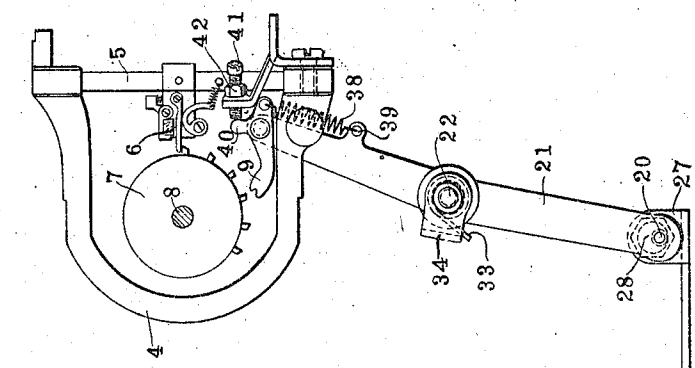


Fig. 3.

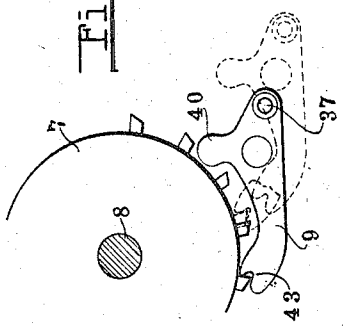


Fig. 4.

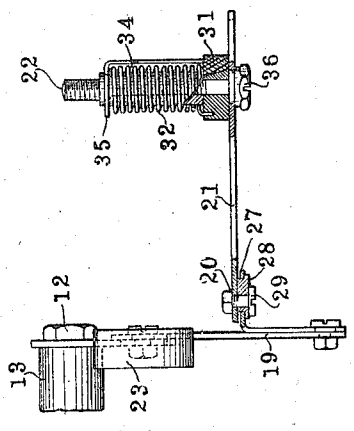
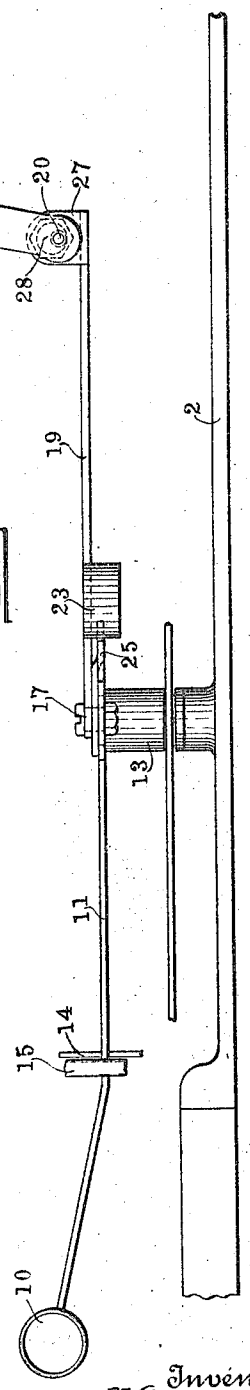


Fig. 2.



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NILS H. ANDERSON, OF MIDDLETOWN, CONNECTICUT, ASSIGNOR TO THE NOISELESS TYPEWRITER COMPANY, OF MIDDLETOWN, CONNECTICUT, A CORPORATION OF CONNECTICUT.

TYPE-WRITING MACHINE.

1,264,589. Specification of Letters Patent. Patented Apr. 30, 1918.

Application filed August 6, 1913. Serial No. 783,333.

To all whom it may concern:

Be it known that I, NILS H. ANDERSON, a citizen of the United States, residing at Middletown, in the county of Middlesex and State of Connecticut, have invented certain new and useful Improvements in Type-Writing Machines, of which the following is a full, clear, and exact description, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to typewriting machines, and with regard to certain more specific features thereof, to that mechanism or part of a typewriting machine known to those familiar with the art as back-spacing mechanism.

One of the objects of the present invention is to provide a simple and practical back-spacing mechanism which will be efficient in use and noiseless in operation. Another object is to provide a device of the above character which will be cheap to manufacture and easy to assemble and install. A further object is to provide a device of the above character permitting of ready adjustment under varying conditions and adapted to relieve strain upon movable parts when movement of other parts connected therewith is positively prevented. Other objects will be in part obvious and in part pointed out hereinafter.

The invention accordingly consists in the features of construction, combinations of elements and arrangement of parts which will be exemplified in the construction hereinafter set forth, and the scope of the application of which will be indicated in the following claims.

In the accompanying drawings, in which is illustrated one of the various possible embodiments of the several features of the invention,

Figure 1 is a side elevation of the back-spacing mechanism and such associated and co-acting parts as appear necessary to sufficiently illustrate one embodiment of the present invention;

Fig. 2 is a plan view thereof;

Fig. 3 is a detail view showing the movement of the back-spacing dog; and

Fig. 4 is an end elevation, partly in section, of a portion of the mechanism shown in Fig. 2.

Similar reference characters refer to similar parts throughout the several views of the drawing.

Referring now in detail to the drawings, and more particularly to Figs. 1 and 2, there is denoted by 1 and 2 opposite side wall portions of the frame of the machine adapted to be connected by a transverse supporting member 3, from which is suspended a U-shaped escapement bracket 4. This member 4 is adapted to support a rocker member 5 carrying escapement mechanism 6 of any desired form, but preferably one of the several forms of "Noiseless" escapement mechanism, such as shown, for example, in patent to Kidder and Sponsel, Serial No. 871,281, issued November 19, 1907. The escapement mechanism is, as is well known, designed to co-act with a carriage-controlling rack, such as an escapement wheel 7, mounted upon a vertically disposed shaft 8 connected with the carriage (not herein shown), for controlling its normal letter-space movement.

The back-spacing mechanism now to be described is also adapted to co-act through a dog 9 directly with the same escapement wheel 7, to rotate the wheel in the opposite direction against the action of the carriage drive spring for returning the carriage to a former letter printing position, in order that a correction or reprinting of a character may be more conveniently performed. There are, of course, other objects and advantages obvious to those familiar with the art and the practical operation of a typewriting machine which it is believed are unnecessary to refer to in detail.

This back-spacing mechanism comprising an actuating key 10 conveniently positioned in the keyboard of the machine and connected by a link and levers with the back-spacing dog 9, which latter, until operated, lies adjacent but normally out of contact with, the escapement wheel 7. The key 10 is secured to one end of a key-lever 11 pivotally mounted upon a shouldered nut 12 engaging a boss or stud 13 projecting inwardly from the side wall 2 of the frame of the machine. The lever 11 is guided by a comb member 14 common to all of the key-levers (not herein shown), and its return movement is limited by a common stop-bar 15 thereabove provided with cushion 16 to si-

lently limit its return movement. Loosely mounted upon the key-lever 11, at the point 17, is a second lever 18, which with the lever 11 form a bell crank lever. The lower end of the lever 18 is connected to a link 19, the opposite end of which is pivotally connected at 20 to a second lever 21 pivoted near its middle on a stud 22 and carrying the back-spacing dog at its opposite end.

The parts 11 and 18 of the bell crank lever normally have a fixed relation and are held in such relation by means of a C-shaped flat sheet metal spring 23, such as used on calipers, engaging cut-out notches 24 on rearwardly projecting portions 25 and 26 of the levers 11 and 18, respectively. This spring 23 is of a strength to more than balance the carriage drive spring at all times, thereby eliminating any lost motion except when movement of the carriage is prevented.

This connection between the levers 11 and 18 is for the purpose of transmitting only a safe strain to the escapement wheel or other delicate parts should reverse movement thereof be prevented for any reason, as for example, if the carriage were held against further backward movement when the key was depressed. The carriage might be at the extreme right-hand or line-commencing position when the operator accidentally pressed the back-spacing key, or pressed it upon the assumption that the carriage was not in proper line-commencing position when in fact it was, in which case the force exerted would otherwise, through the several power multiplying devices, place an undue strain upon the escapement wheel, thereby possibly injuring or bending the teeth or certain intermediate parts.

The link 19, connecting the lower end of the lever 18, is provided with a turned-over ear 27 at its opposite end. An eccentric hexagonal adjusting bushing 28, mounted on a screw 29, connects the link 19 with the lever 21. By loosening the pivot screw 29, passing through the hexagonal eccentric bushing 28, the relative position of the link 19 and lever 21 may be conveniently adjusted to vary the throw of the dog 9 as desired.

The stud 22 is threaded into the under side of the transverse support 3 and held against rotation by means of a lock nut 30 on the upper side. An adjusting collar 31 slips loosely over the lower part of this stud and holds one end of a coil spring 32, which is the return spring for the mechanism and tends to hold the parts in normal position, as shown in Fig. 1. The opposite end 33 of this spring co-acts with an arm 34 extending upwardly from the lever 21 having a perforated turned over end 35 through which the stud 22 passes, thereby forming a more efficient bearing. From Fig. 4 it will be seen that the lever 21 turns freely on the shouldered portion of a screw 36 which is adapted to hold the adjusting collar 31 in its adjusted position.

The dog 9, as shown more clearly in Fig. 3, comprises a three-arm member, one arm 37 of which is perforated to receive one end of a coil tension spring 38, the opposite end of which is connected to an eye 39 near the middle of one arm of the lever 21, for the purpose of moving the dog 9 into engagement with the teeth of the escapement wheel 7 as soon as the key 10 is depressed. Another arm 40 of the dog 9 is adapted to co-act when returning to normal position with a diagonally disposed adjusting screw 41 carried by the rocker frame 4. This adjusting screw 41 is provided with a lock nut 42 for holding it in adjusted position. By disposing the set screw 41 diagonally with respect to the movement of the dogs it avoids certain other parts of the mechanism and thereby permits a more convenient adjustment of the clearance between the tooth of the back space dog 9 and the teeth of the escapement wheel. The third arm of the back space dog 9 carries the engaging tooth 43. This tooth of the back space dog is bifurcated or forked in the manner shown, one part to engage the end and the other the side of the tooth, thereby preventing a binding engagement between the dog and the root of the tooth with which it co-acts, thus greatly improving the touch in operating. The rounded corners tend to eliminate a chipping of the hardened surfaces of the teeth of the escapement wheel.

The operation and manner of using a device of this character are substantially as follows: When it is desired to return the carriage one or more spaces for reprinting or correcting a character, the key 10 is pressed one or more times as may be necessary for moving the carriage backward one letter space at each depression thereof. Motion is transmitted through the levers 11 and 18 which forces the link 19 rearward, and in turn causes the inner end of the lever 21 to move forward toward the keyboard of the machine. The instant the inner end of the lever 21 moves, the coil spring 38 acting upon one end 37 of the back-spacing dog, will swing the dog about its pivot and carry the tooth 43 into engagement with the tooth of the escapeemnt wheel 7, as shown by the dotted lines in Fig. 3, the parts 40 and 41 remaining in engagement as long as possible. A continued movement of the lever causes the dog to turn the wheel a distance sufficient to move the carriage backward one letter space, or to that position shown in full lines, in which position it will be noted that the arm 40 of the back-spacing dog has entered the space between two of the following teeth of the escapement wheel. In this manner an overthrow of the escape-

ment wheel which might otherwise be caused by the momentum of the carriage is positively prevented. The downward movement of back space key 10, is, of course, limited by the comb member 14. As soon as the key 10 is released, the spring 32, which has been tensioned by the downward movement, acts upon the arm 34 to return the parts silently to their original or normal position. The arm 40 co-acts with the adjusting screw 41 at the end of the rearward movement, thus carrying the tooth 43 of the dog to a position just clear of the path of travel of the escapement wheel, where it may be subsequently actuated without moving a sufficient distance to produce any clicking noise. It is, of course, understood that the escapement mechanism 6 co-acts with the succeeding teeth of the escapement wheel to prevent a return movement thereof.

If, for any reason, further backward movement of the carriage and a corresponding movement of the escapement wheel is positively prevented, the spring 23 connecting the levers 11 and 18 will take up the force exerted and relieve the strain upon the more delicate parts.

From the above description, it will be seen that the present construction is of a simple and practical nature, inexpensive to manufacture and designed to accomplish, among others, all of the objects and advantages above set forth.

As many changes could be made in the above construction and many apparently widely different embodiments of this invention could be made without departing from the scope thereof, it is intended that all matter contained in the above description or shown in the accompanying drawings shall be interpreted as illustrative and not in a limiting sense.

Having described my invention, what I claim as new and desire to secure by Letters Patent is:

1. In a typewriting machine, in combination, a carriage-controlling rack, a back-spacing dog therefor having means to limit movement thereof, and a stop to coact with said means for normally maintaining said dog out of engagement with said rack.

2. In a typewriting machine, in combination, an escapement rack, a dog rocker, a supporting bracket for said rocker, a back-spacing dog, and a stop on said bracket controlling the normal position of said back-spacing dog.

3. In a typewriting machine, in combination, a horizontally disposed rack wheel at the rear of the machine, a back-spacing key at th front of the machine, operative connecting means between said elements including a medially pivoted lever extending transversely at the rear of the machine, and a back-spacing dog pivoted thereon adjacent said wheel and bodily movable in a fore and aft direction.

4. In a typewriting machine, in combination, a horizontally disposed escapement wheel at the rear center of the machine, an actuating key at the front side of the machine, a bell crank lever attached at one end to said key, a thrust member attached to the other end of said lever, and a transversely extending medially pivoted lever attached to said thrust member and provided at its opposite end with a pivotally mounted back-spacing dog to coöperate with said wheel.

5. In a typewriting machine, in combination, an escapement rack, a dog adapted to co-act therewith, an actuating key, connections between said key and dog including a two-part bell crank lever, and yielding means for holding said parts of said bell crank lever in relatively fixed relation.

6. In a typewriting machine, in combination, an escapement rack, a dog adapted to co-act therewith, an actuating key, connections between said key and dog including a two-part bell crank lever, and spring means yieldingly holding said parts in normal fixed relation.

7. In a typewriting machine, in combination, an escapement rack, a back-spacing dog adapted to co-act therewith, an actuating key, connections between said key and dog including a two-part bell crank lever, projecting portions on each of said parts, and spring means connecting said portions for holding the parts of said lever in normal fixed relation.

8. In a typewriting machine, in combination, an escapement rack, a dog adapted to co-act therewith, an actuating key, connections between said key and dog including a key lever, a second lever pivoted thereon and having a normal operative position at right angles thereto, and spring means connecting said levers and adapted to hold them in such normal position except when subjected to undue strain.

9. In a typewriting machine, in combination, an escapement rack, a back-spacing dog adapted to co-act therewith, an actuating key, connections between said key and dog including a pivotally mounted lever, a support upon which said lever is mounted, and a coil spring about said support, one end of which is adjustably mounted and the other end of which is adapted to co-act with said lever for returning the parts to normal position.

10. In a typewriting machine, in combination, a rack, a back-spacing dog adapted to co-act therewith, an actuating key, connections between said key and dog including a pivotally mounted lever, an arm on said lever forming a bearing therefor, and a coil spring positioned about the pivot and co-acting with said arm.

11. In a typewriting machine, in combination, a rack, a back-spacing dog adapted to co-act therewith, an actuating key, connections between said key and dog including a lever pivotally mounted near its middle, an arm on said lever forming a bearing therefor, a coil spring positioned about the pivot and co-acting with said arm, and means adapted to adjust the tension of said spring.

12. In a typewriting machine, in combination, a rack, a back-spacing dog adapted to co-act therewith, an actuating key, connections between said key and dog including a lever pivotally mounted near its middle, an arm on said lever forming a bearing therefor, a coil spring positioned about the pivot and co-acting with said arm, and means adapted to adjust the tension of said spring, said means including an adjustable nut to which one end of the coil spring is secured, and locking means for holding the nut in adjusted position.

13. In a typewriting machine, in combination, a rack, a back-spacing dog adapted to co-act therewith, an actuating key, connections between said key and dog including a pivotally mounted lever, an arm on said lever forming a bearing therefor, a coil spring positioned about the pivot and co-acting with said arm, and means adapted to adjust the tension of said spring.

14. In a typewriting machine, in combination, a rack, a back-spacing dog adapted to co-act therewith, an actuating key, connections between said key and dog including a lever pivotally mounted near its middle, and a support for said lever comprising a shouldered screw, the lever being mounted upon the shoulder of said screw.

15. In a typewriting machine, in combination, a rack, a back-spacing dog adapted to co-act therewith, an actuating key, connections between said key and dog including a pivoted lever, an arm on said lever forming a bearing therefor, a coil spring positioned about the pivot and co-acting with said arm, and means adapted to adjust the tension of said spring, said means including a stud supported from the frame of the machine, and a shouldered lock screw engaging a tapped out portion of said stud, said lever being adapted to turn on the shouldered portion of said screw.

16. In a typewriting machine, in combination, a rack, a back-spacing dog adapted to co-act therewith, an actuating key, connections between said key and dog including a pivoted lever, a coil spring positioned about the pivot and co-acting with said lever, and means adapted to adjust the tension of said spring including a nut supported from the frame of the machine to which the spring is connected, and a shouldered screw engaging said nut, said lever being adapted to turn on the shouldered portion of said screw.

17. In a typewriting machine, in combination, a rack, a back-spacing dog adapted to co-act therewith, a key at the keyboard of the machine, and intermediate connections between the dog and the key comprising a lever upon which the key is mounted, a second lever upon which the dog is mounted, a connecting link between said levers, said back-spacing dog having a plurality of arms, one of which is adapted to engage the top and side of a tooth on said rack and another of which is adapted to enter the space between two of the succeeding teeth to prevent overthrow of said rack.

18. In a typewriting machine, in combination, an escapement rack, a back-spacing dog adapted to co-act therewith, a key at the keyboard of the machine, intermediate connections between the dog and the key comprising a lever upon which the key is mounted, a second lever upon which the dog is mounted, a connecting link between said levers, said back-spacing dog having a plurality of arms, one of which is adapted to engage the top and side of a tooth on the escapement rack and another of which is adapted to enter the space between two of the succeeding teeth to prevent overthrow of said rack, and a spring connected with another arm of said dog for urging the dog into engagement with the escapement rack when the actuating key is depressed.

In testimony whereof I affix my signature, in the presence of two witnesses.

NILS H. ANDERSON.

Witnesses:
JAMES K. GUY,
EDWARD N. SLAVIN.