W. J. BARRON.

TYPE WRITING MACHINE.

APPLICATION FILED AUG. 17, 1910.

1,003,972. Patented Sept. 26, 1911.

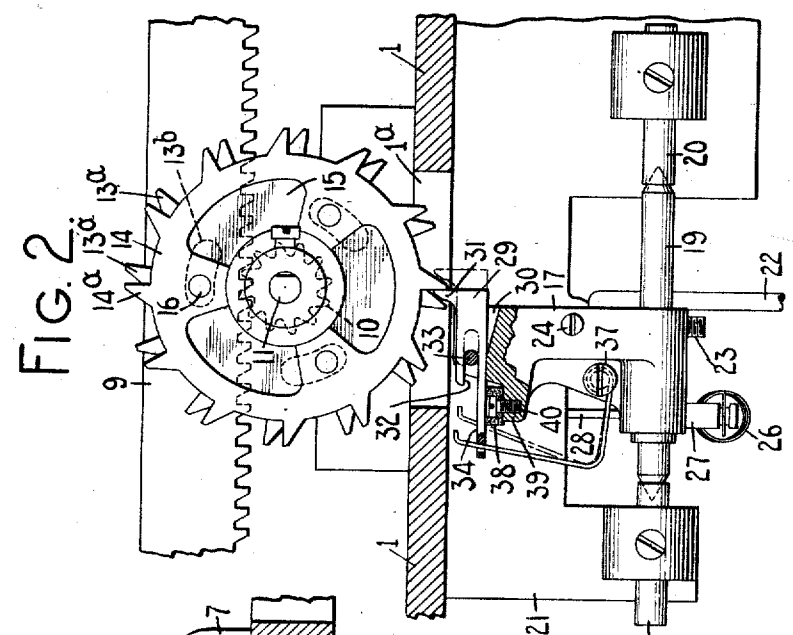

FIG. 2.

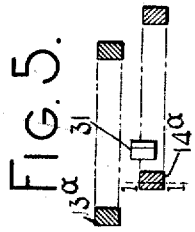

FIG. 5.

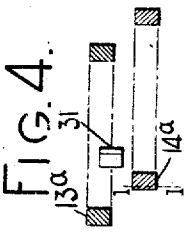

FIG. 4.

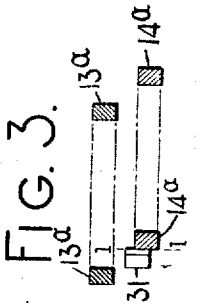

FIG. 3.

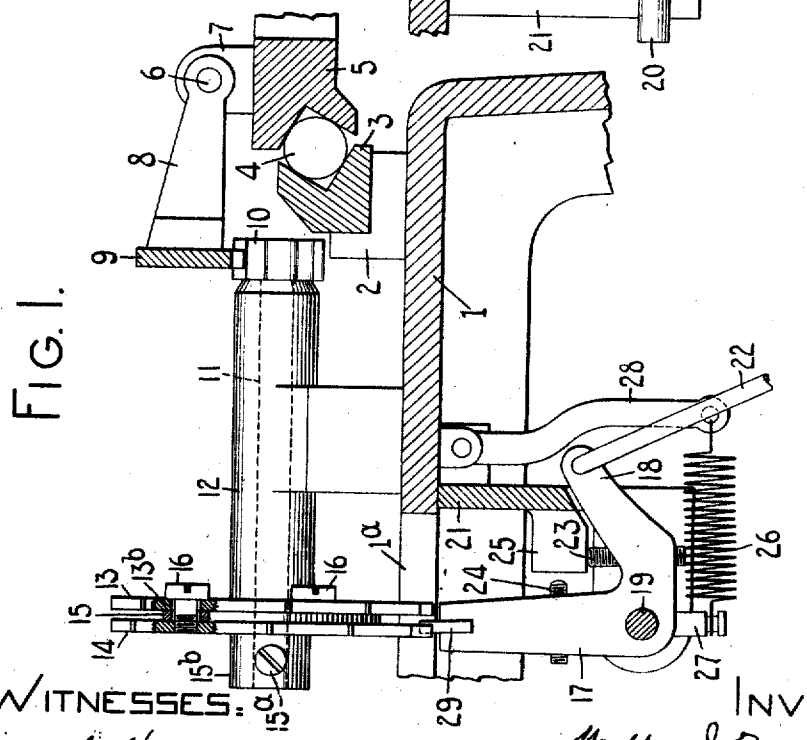

FIG. 1.

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WALTER J. BARRON, OF NEW YORK, N. Y., ASSIGNOR TO REMINGTON TYPEWRITER COMPANY, OF ILION, NEW YORK, A CORPORATION OF NEW YORK.

TYPE-WRITING MACHINE.

1,003,972. Specification of Letters Patent. Patented Sept. 26, 1911.

Application filed August 17, 1910. Serial No. 577,642.

To all whom it may concern:

Be it known that I, WALTER J. BARRON, citizen of the United States, and resident of the borough of Brooklyn, city of New York, in the county of Kings and State of New York, have invented certain new and useful Improvements in Type-Writing Machines, of which the following is a specification.

My invention relates to carriage feeding mechanism for typewriting machines and its object is to provide improved escapement mechanism and more especially to provide improvements on the escapement mechanism shown in the patent to Yaw No. 944,303, granted December 28th, 1909.

To the above and other ends my invention consists in the features of construction, combinations of devices and arrangements of parts hereinafter described and particularly pointed out in the claims.

While my invention is designed as an improvement on that of Yaw aforesaid, it is to be understood that various features of it may be used in connection with other forms of carriage feeding mechanism.

My invention is illustrated in the accompanying drawings as applied to a No. 10 Remington typewriting machine.

In said drawings, Figure 1 is a fragmentary vertical front to rear sectional view of parts of a typewriting machine embodying my invention. Fig. 2 is a rear elevation partly in section of Fig. 1. Figs. 3, 4 and 5 are operating views, showing horizontal sections of the escapement elements viewed from the rear.

The frame of the typewriting machine comprises a top plate 1 from which rise lugs 2 supporting fixed guide rails of which only the rear one 3 is shown. The rails are grooved to receive anti-friction balls 4 which also coöperate with the oppositely grooved rails of a platen carriage, the rear carriage rail 5 being illustrated in Fig. 1. The carriage is power driven, being constantly urged leftward by the usual spring drum to which it is connected by a band (not shown). Pivoted at 6 to lugs 7 rising from the rail 5 is a frame comprising rearwardly extending arms 8 of which only one is shown, and secured to said arms is a feed rack 9 which is normally maintained in spring-pressed engagement with a feed pinion 10 fast on the forward end of a shaft 11 which bears in a bracket 12 secured to the top plate 1. Fixed to the rear end of the shaft 11 are two toothed escapement wheels 13 and 14. These are of the same diameter and are provided with the same number of teeth, numbered respectively 13^a and 14^a, each tooth having a radial working face and a rear face at an acute angle to said working face. As is well understood the two escapement wheels are relatively adjustable to provide either for an ordinary or a "reverse feed", that is, a feed that takes its place during the downward stroke of the printing keys. To provide for such adjustment a disk 15 is secured to the rear end of the shaft 11 by means of a set screw 15^a passing through a hub or flange 15^b of said disk and abutting against the shaft 11. The escapement wheels 13 and 14 are arranged at opposite sides of said disk and are adapted to be clamped thereto by clamping screws 16 which pass from front to rear through slots 13^b in the forward escapement wheel and engage in tapped holes in the rear escapement wheel 14 after passing through plain holes in the intermediate disk 15. By loosening the screw 16 the wheel 13 may be rotated relatively to the wheel 14, the extent of rotation being limited by the length of the slots 13^b. These slots are of sufficient length to permit an adjustment of the wheel 13 so that a drop substantially a full letter space distance may, if desired, be obtained between a tooth of the rear wheel 14 and the corresponding tooth in the forward wheel 13. In the present instance the two escapement wheels are adjusted to provide for the reverse feed, the teeth 13^a being set nearly a full letter space behind the corresponding teeth 14^a. The adjustable construction, above described, for the escapement wheels is not my invention and is not claimed *per se* by me.

A dog rocker or carrier comprising a vertically disposed arm 17 and a forwardly extending arm 18 is fixed on a spindle 19 which takes bearings in pivot pins 20 on a bracket 21 depending from the top plate. The arm 18 of the dog rocker is connected by a link 22 with universal bar mechanism controlled by the printing keys, which are connected to operate type bars. The universal bar, type bars and printing keys

are not shown herein, but may be of the usual or any suitable construction. Adjustable screw stops 23 and 24 carried by the dog rocker are adapted to coöperate with angularly disposed faces of a fixed abutment or stop lug 25, the stops 23, 24 and 25 limiting the movements of the dog rocker in both directions. A coiled spring 26, connected to a pin 27 on the dog rocker and to a relatively fixed support 28 serves to maintain the pin 23 normally in contact with the coacting stop 25.

The dog rocker provides a support for a dog or member which is novel in construction and mounting. Said dog is designated as a whole as 29 and will be described principally in connection with Fig. 2, which, it will be recalled, is a rear view. The member 29 is plate-like in form and is slidably and pivotally mounted in a slot or kerf 30 cut in the top of the rocker arm 17. The dog or detent 29 is horizontally disposed and has an upwardly extending pointed tooth or dog proper 31 at its right-hand end, said tooth having a straight working face and a beveled rear face and normally engaging with a tooth 14^a on the rear escapement wheel. The two escapement wheels extend down through a slot or opening 1^a in the top plate 1 and the dog or tooth 31 extends upward partly through the opening 1^a to coöperate with the escapement wheels. At its left-hand end the member or dog 29 is formed with a horizontal slot 32 which receives a cross pin or pivot 33, bridging the kerf 30. Below the slot the member 29 is extended leftward as indicated at 34, the extension 34 being formed near its end with a vertical hole 35 which receives the upper free end portion of a vertically disposed arm of an L-shaped wire spring 36. From the lower end of its upright arm the spring 36 has a horizontally disposed arm extending rightward and secured at its right-hand end by a screw 37 to the rocker arm 17. The upright arm of the spring 36 is inclined slightly to the right and its tension is toward the right so that it tends constantly to slide the member or dog 29 rightward. The spring 36 is, however, normally overcome by the main spring acting through the engaged tooth 14^a and which normally maintains the closed right-hand end of the slot 32 in contact with the pin 33. Also the spring 36 tends to hold up the tooth 31 and to hold down the arm 34 which is at the left of the pivot 33, as viewed from the rear, and to maintain the under side of said arm normally in contact with a buffer or stop 38. This buffer is preferably a disk of leather or the like which is seated on a lip or ledge 39 near the top of the rocker arm 17 at the left thereof and is secured in place by a screw 40.

Referring to some of the features of operation, it will be noted that in normal position, as shown most clearly in Figs. 2 and 3, the dog or detent 31 is engaged at its working or vertical right-hand face with the working face of one of the teeth 14^a and that, viewed from the rear, it is at this time just to the right of and behind one of the teeth 13^a of the escapement wheel 13, which wheel, it will be recalled, has been set to provide for a feeding of the carriage of substantially a full letter space distance during the depression of a printing key. When one of the printing keys is operated the link 22 acts to rock the dog rocker on its pivot and swings the rocker arm 17 forward, moving the dog or detent 31 transversely of the plane of the escapement wheels, said dog passing out of engagement with the tooth 14^a and into the plane of the teeth of the forward escapement wheel 13. As soon as the dog disengages from the engaged tooth 14^a it will be forced rightward by the spring 36, said dog sliding along the top of the buffer 38 and the left-hand side of the bottom of the slot 30, the slot 32 at the same time traversing the pivot 33. This movement of the dog is independent, of course, of the dog rocker. Said movement is limited by the contact of the spring 36 with the upper edge of the buffer 38, as indicated by broken lines in Fig. 2. The position of the dog 31 at this time is also indicated by broken lines in Fig. 2 and additionally is illustrated in Fig. 4. As soon as the dog disengages from the escapement wheel 14 the two escapement wheels are free to turn and permit the advance of the carriage. If the operated printing key is held down the movement of the escapement wheels and carriage will continue for nearly a full letter space distance or until the advancing tooth 13^a of the escapement wheel 13 engages with the dog and overcomes the spring 36, forcing said dog leftward until the end of the slot 32 contacts with the pivot pin. When the printing key is released and the dog swings back on the dog rocker to normal position there will be a slight advance of the escapement wheel and the carriage due to the drop between the engaged tooth 13^a and the next tooth 14^a with which the dog engages. Under a very rapid operation, however, it may happen that the dog rocker will be swung forward and then swung back, carrying the dog 31 first forward out of the plane of the wheel 14 and then back into the plane of said wheel before said wheel has turned any considerable extent. The cycle of operations under such conditions of rapid operation of the printing keys is represented in Figs. 3 to 5. Comparing these figures it will be observed that when the dog 31 first swings forward and out of engagement with the tooth 14^a it is then slid rightward by the spring 36 past the tooth 14^a (see Fig. 4) after which, moving with the dog rocker,

it is swung in behind the previously engaged tooth 14^a as shown in Fig. 5. During this operation it will be noted there has been but a slight turning movement or advance of the escapement wheels, as will be apparent from a comparison of the vertical dotted lines 1—1 in Figs. 3 to 5, the line 1—1 designating the normal line of contact between the dog 31 and the tooth 14^a in Fig. 3 and being supposed to remain stationary in the other two figures so that the extent of the advance of the tooth 14^a may be readily observed. It will be apparent that if, as in the prior construction, the dog 31 were fixed to the dog rocker arm 17, instead of as in the present instance being slidably mounted thereon, then, in such a rapid operation as described, the dog would not be moved rightward by its spring 36, as in Fig. 4, so that it could swing in behind the tooth 14^a, as in Fig. 5; but instead would, when the rocker returned, strike the back of the tooth 14^a and frictionally engage therewith. The advance of the escapement wheels might be retarded by reason of this friction, and furthermore the dog rocker and dog would be prevented from swinging back to normal position until the tooth 14^a had turned far enough to disengage from the dog. It will be seen then that by the use of my invention an improved operation may result under certain conditions and the rapid operation of the parts and consequent rapid and uninterrupted advance of the carriage may be facilitated.

It will be observed that the pinion 10 and the escapement wheels are rigidly connected in the present construction through the shaft 11. Consequently if the rack 9 remains engaged with the pinion 10 during return movements of the carriage the pinion will be turned backward, as will also the escapement wheels. During the backward turning movement, the rear beveled faces of the teeth 14^a, acting against the rear beveled face of the dog or tooth 31, will swing said tooth downward, rocking the member 29 pivotally on the pivot pin 33. The bottom of the slot 30 is inclined downward at the right to permit of this pivotal movement. Said pivotal movement takes place against the tension of the spring 36, the upper end of which, acting against the right-hand side of the hole 35, exerts a camming action on the extension 34, tending to force said extension downward and restore the member 29 to normal position. This restoring movement takes place each time one of the teeth 14^a turns back far enough to release the dog. Consequently, during the backward turning movement of the escapement wheels the member 29 will be vibrated on its pivot as a result of co-action with each tooth 14^a. The return portion of each vibratory movement is limited by the top of the leather buffer 38 which also lessens the noise or click of the vibrations and acts in a degree as a sound deadening device.

It will be observed that the spring 36 has several functions, first, it serves to slide the dog member 29 rightward, as viewed from the rear; second, it serves in conjunction with the buffer 38 to limit the extent of this sliding movement; and third, it acts as a restoring spring when the member 29 is turned on 33 as a pivot during backward or return movements of the carriage. Moreover, the device 38 provides a slightly yielding support or cushion for the member 29 and serves also as a stop to limit return pivotal movements of said member and also in conjunction with the spring 36 to limit slidable movements of said member in one direction.

It will further be observed that by my present invention I provide in combination with a power driven carriage, escapement devices which comprise a plurality of escapement wheels or circular racks which are secured together rigidly so that at all times when in operation said wheels move together as one part; that means are provided for affording relative adjustment between said wheels to regulate the extent of drop or movement when the feed dog moves transversely of said wheels from one to the other; that the feed dog is mounted on the dog carrier so as to have a movement of translation independent of said carrier; that said feed dog is movable with the carrier transversely of the planes of the escapement wheels; that it is movable in a second direction toward and away from the axis of said wheels; that it is also movable in a third direction at an angle to the direction of movement toward and away from the wheel axis, this movement in the third direction in the present instance being a slidable movement of translation on the dog carrier, while the movement at an angle to the slidable movement is a pivotal movement and may also take place independently of movement by the dog carrier; that means are provided cooperating with said dog to restore it after such pivotal movement and also after such slidable movement, said means in the present instance being a single spring; that yielding means, in the present instance a leather buffer, assist to limit the movements of said dog and also that said means tend to promote noiseless operation of the parts; that the spring cooperating with said dog tends normally to move it in a direction opposite to that in which said wheels turn during printing movements of the carriage; that during movement of the dog carrier and dog transverse of the escapement wheels, the spring operates to move the dog in a direction opposite to that in which the wheels turn; that the dog is provided with a hole

which is engaged by a straight inclined portion of the coöperating spring; that said spring is in the nature of a spring cam and acts on said dog to cam it and restore it to normal position during backward turning movements of the escapement wheels.

Various changes may be made without departing from the scope of my invention.

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

1. In escapement mechanism for typewriting machines, co-acting escapement devices comprising a feed dog mounted for both pivotal movement and bodily sliding movement, in combination with a single spring engaging said dog at one point only and operative on said dog to restore it after such pivotal movement and also after such slidable movement.

2. In escapement mechanism for typewriting machines, co-acting escapement devices comprising a feed dog mounted for both pivotal movement and bodily sliding movement, in combination with means for restoring said dog to normal position after such pivotal and sliding movements, said means engaging said dog at one point only, and yielding means assisting to limit the movements of said dog.

3. In escapement mechanism for typewriting machines, co-acting escapement devices comprising a feed dog mounted for both pivotal movement and bodily sliding movement, in combination with means for restoring said dog to normal position after such pivotal and sliding movements, said means engaging said dog at one point only, and means assisting to render noiseless the movements of said dog.

4. In escapement mechanism for typewriting machines, co-acting escapement devices comprising a feed dog mounted for both pivotal movement and bodily sliding movement, and a single spring for communicating both pivotal movement and bodily sliding movement to said dog, said spring engaging said dog at one point only.

5. In escapement mechanism for typewriting machines, co-acting escapement devices comprising a feed dog mounted for both pivotal movement and bodily sliding movement, in combination with buffer means for said dog, and a restoring spring for said dog, said spring and said buffer means co-acting directly with each other to limit the movements of said dog.

6. In escapement mechanism for typewriting machines, co-acting escapement devices comprising a pivotally mounted feed dog, and a spring having a normally inclined portion engaging a hole in said feed dog, said spring acting as a cam for said dog.

7. In escapement mechanism for typewriting machines, co-acting escapement devices comprising a pivotally mounted feed dog, and a spring cam for said dog, said cam operating to turn said dog pivotally and having a normally inclined portion engaging said dog.

8. In escapement mechanism for typewriting machines, co-acting escapement devices comprising a pivotally mounted feed dog, a dog carrier, and a cam on said carrier normally under tension to move said dog independently of said carrier.

9. In a typewriting machine, the combination of two parallel escapement wheels, a key-operated dog carrier movable transversely of the planes of said wheels, a slotted dog on said dog carrier, a pivot pin engaging a slot in said dog, and a spring engageable at one point only with said dog, said dog being slidable on said pivot pin and also rotatable on the same as a center.

10. In a typewriting machine, the combination of two parallel escapement wheels, a key operated dog carrier movable transversely of the planes of said wheels, a slotted dog on said dog carrier, a pivot pin engaging a slot in said dog, and a spring engageable at one point only with said dog, said dog being slidable on said pivot pin and also rotatable on the same as a center, and said spring operating to restore said dog after both pivotal and sliding movements thereof.

11. In a typewriting machine, the combination of a power driven carriage, escapement devices comprising a wheel and a dog normally engaged, the rear faces of said wheel and dog being beveled, said dog being movable out of the path of said escapement wheel, and a spring engaging at one point only with said dog, said spring assisting to normally maintain the normal relationship between said dog and said wheel and permitting the dog to be moved out of the path of the escapement wheel during backward movements of said wheel, said spring also operating to move said dog during printing movements of said escapement wheel.

Signed at Hingham, in the county of Plymouth and State of Massachusetts this 15th day of August, A. D. 1910.

WALTER J. BARRON.

Witnesses:
ERNEST E. LINCOLN,
CARRIE V. WHITE.