July 18, 1933. F. H. TREGO 1,918,304

BACK SPACING MECHANISM FOR TYPEWRITING MACHINES

Filed May 31, 1930 3 Sheets-Sheet 1

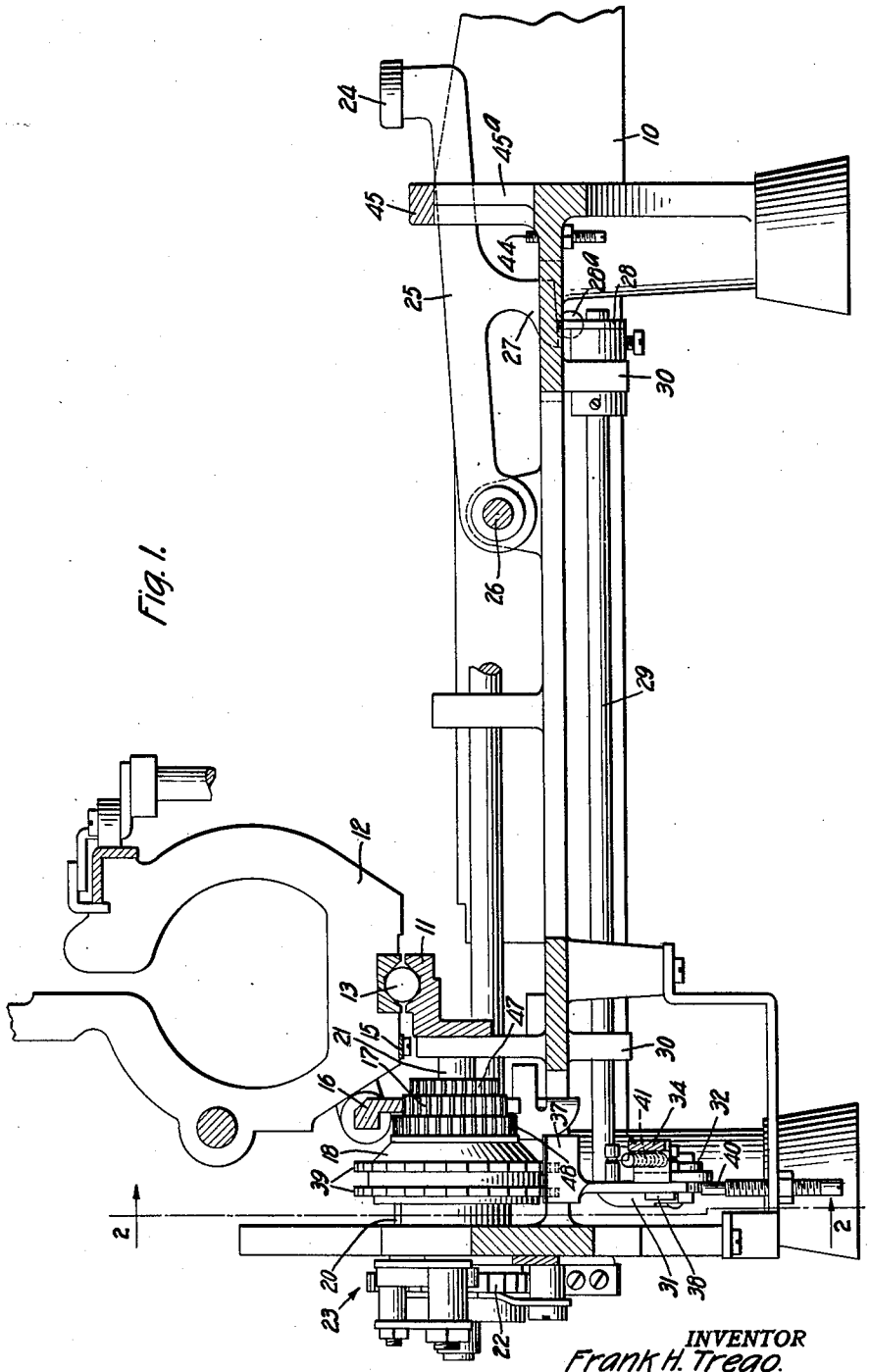


Fig. 1.

INVENTOR
Frank H. Trego.
BY John Waldheim
ATTORNEY

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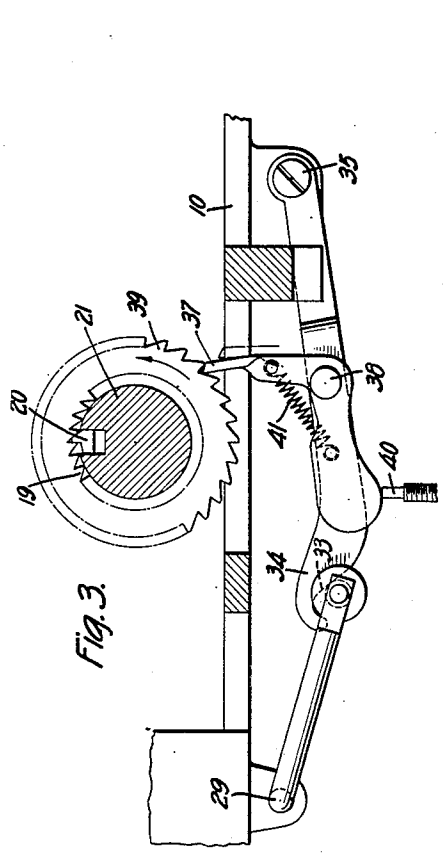


Fig. 3.

Fig. 2.

INVENTOR
Frank H. Trego.
BY John Waldheim
ATTORNEY

July 18, 1933. F. H. TREGO 1,918,304

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Filed May 31, 1930 3 Sheets-Sheet 3

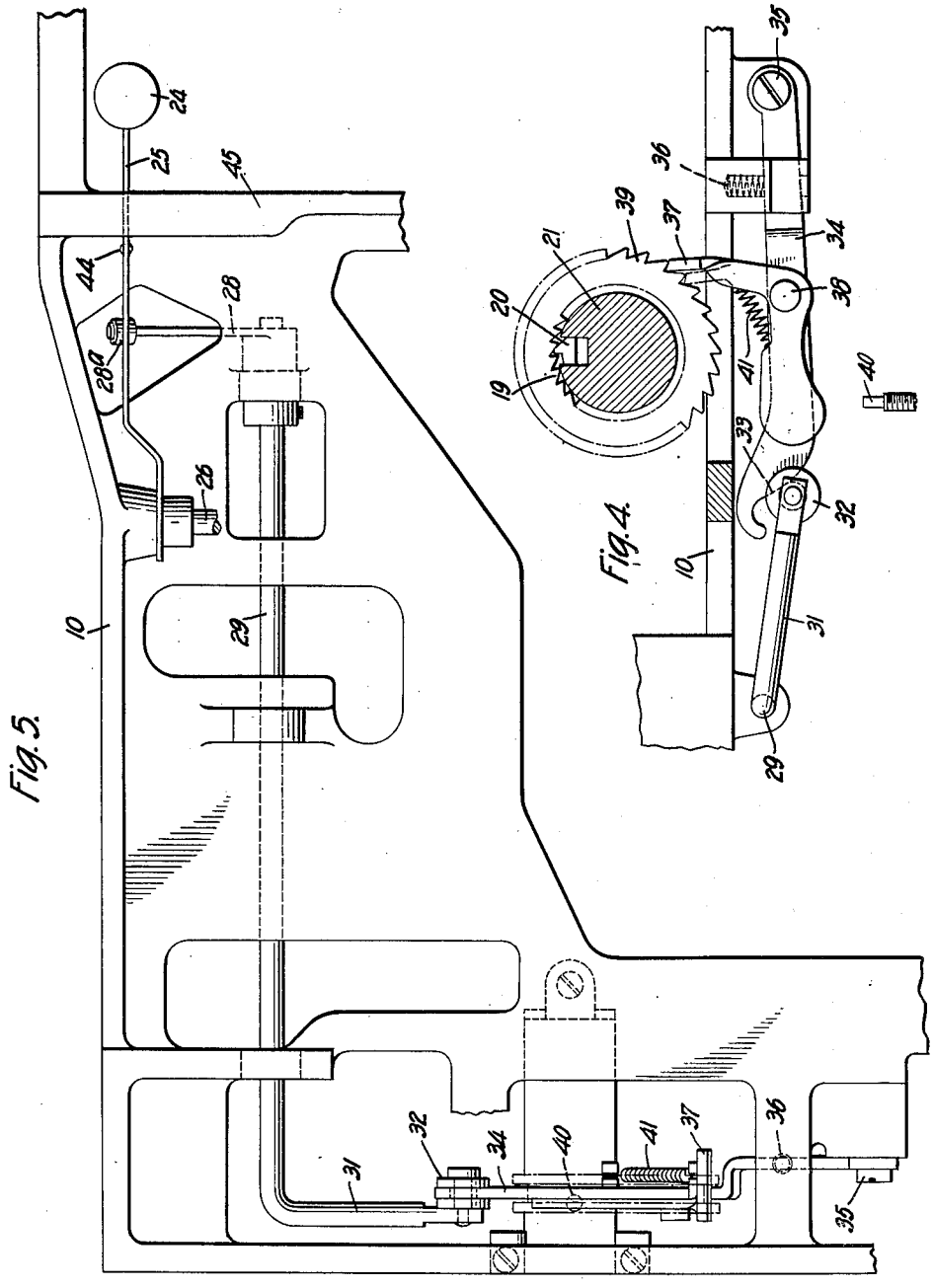


Fig. 5.

Fig. 4.

INVENTOR
Frank H. Trego.
BY John Waldheim
ATTORNEY

Patented July 18, 1933 1,918,304

UNITED STATES PATENT OFFICE

FRANK H. TREGO, OF NEW YORK, N. Y., ASSIGNOR, BY MESNE ASSIGNMENTS, TO RALPH C. COXHEAD CORPORATION, OF NEW YORK, N. Y., A CORPORATION OF DELAWARE

BACK SPACING MECHANISM FOR TYPEWRITING MACHINES

Application filed May 31, 1930. Serial No. 457,676.

This invention relates to typewriting machines and more particularly to back-spacing mechanism therefor.

A feature of the invention relates to means including a ratchet associated with a pinion element shiftable relatively to a feed rack for variable spacing of the carriage, and a back spacer pawl to engage the ratchet in any one of its shifted positions.

Other features and advantages will hereinafter appear.

In the drawings,

Fig. 1 is a sectional side view of the machine, some of the irrelative parts thereof being omitted;

Fig. 2 is a sectional rear view of the machine, taken on the line 2—2 of Fig. 1;

Fig. 3 is a view similar to Fig. 2 but showing the back spacing mechanism operated sufficiently to swing the pawl into engagement with the ratchet wheel;

Fig. 4 is also similar to Fig. 2 but showing the back spacing mechanism fully operated; and

Fig. 5 is a top plan view of Fig. 1, some of the parts being omitted.

Similar reference characters represent similar parts throughout the several views.

The invention is herein illustrated as applied to a typewriting machine known as the Varityper, which includes a main-frame 10 having a rail 11 upon which is supported a carriage 12 through the medium of anti-friction rollers or balls 13.

A spring drum 14 is connected to said carriage by a strap 15 and urges the carriage in a letter-space direction (rightwardly in Fig. 2). A rack 16 on the carriage meshes with a pinion 17 secured to a sleeve 18 provided with an internal ratchet 19 co-operating with a spring-pressed pawl 20 in a shaft 21 rotatively supported on the machine frame. An escapement wheel 22 is secured to the shaft 21 and forms part of the usual escapement mechanism 23 which is operated by the key-levers (not shown) to effect the letter-spacing of the carriage.

To back-space the carriage 12 there is provided at the front of the machine and near the side thereof, a back-space key 24 which, when depressed, swings a lever 25 about a fulcrum 26. A foot 27 on said key-lever engages a roller 28[a] on an arm 28 secured to a rock-shaft 29, supported in lugs 30 on the main frame 10; said rock-shaft being operated, upon the depression of said key, in a counter clockwise direction (Fig. 2) to swing upwardly the free end of an arm 31 on the rear end of said rock-shaft; the arm 31 being provided with a roller 32 engaging a cam 33 at the end of a lever 34 to swing the latter upwardly about a fixed pivot 35 against the action of a return spring 36. It will be understood that by means of the cam 33 the lever 34 is actuated through a greater extent, at its engaged end, than the movement of the actuator or arm 31 at its engaging end.

A pawl 37 is pivotally supported by a stud 38 upon the lever 34 and is normally held out of engagement with a ratchet wheel 39 by a stop 40; a spring 41 being effective to hold the pawl against said stop. During the initial part of the actuation of the lever 34 the pawl 37 is carried upwardly and the spring 41 swings the pawl about its pivot into engagement with the ratchet 39 as indicated in Fig. 3.

Upon a further depression of the back-spacer key 24 the pawl 37 rotates the ratchet 39 in a counter-clockwise direction, to the position in Fig. 4, to thus back-space the carriage a single letter space; the pawl 20 yielding during the back spacing operation to permit one of the teeth of the internal ratchet 19 to snap past said pawl. To the limit the actuation of the pawl 37 to its effective position there is provided an adjustable stop 44, for the key-lever 25, suitably secured to the machine frame 10.

When the back-spacing movement of the carriage has been completed and the finger subsequently removed from the key 24, the spring 36, acting on the lever 34, becomes effective to restore the mechanism to normal. As soon as the pawl 37 engages the stop 40 it begins to swing out of engagement with ratchet wheel 39 against the action of the spring 41. The key-lever 25 is guided in a comb plate 45*a* and is arrested in its normal

position by a bar 45 secured to the top of said comb plate.

The pawl 37 is sufficiently wide to prevent disengagement of the ratchet 39 on the sleeve 18 which is shiftable lengthwise of the shaft 21, in a manner disclosed in my application No. 361,899, filed May 10, 1929, to shift any one of the pinions 17, 47 and 48 into engagement with the rack 16 for variable letter spacing. It will be understood that by providing the ratchet 39 on the sleeve the pinions 17, 47 and 48 may be actuated by the back spacing mechanism so that the extent of back spacing of the carriage always corresponds with the letter pacing effected by the active pinion.

Thus it will be understood that the back-spacing mechanism comprises the key-lever 25 which is a lever of the second order, the pawl carrying lever 37 which is also a lever of the second order and a lever of the first order formed by the rock-shaft 29 and its two arms 28 and 31; said shaft extending fore-and-aft of the machine and the arms 28 and 31 being disposed at opposite ends thereof and extending in opposite directions, one into engagement with the lever 34, the other extending to the key-lever 25.

Having thus described the invention it will be understood that alterations and changes may be made without departing from the spirit of the invention defined in the appended claims.

I claim:—

1. In a typewriting machine, the combination of a carriage, escapement mechanism including a ratchet, pinions connected to the ratchet, a rack to engage anyone of said pinions, means to shift the pinions with the ratchet to carry the desired pinion into engagement with said rack, and a back spacer pawl to engage said ratchet, said pawl being of sufficient width to always engage the ratchet.

2. In a typewriting machine, the combination of a carriage, escapement mechanisms for said carriage, said escapement mechanism including a sleeve including a plurality of pinions thereon, a ratchet wheel on said sleeve, back spacing mechanism to engage said ratchet wheel, said ratchet wheel having a groove in its periphery, and means including an actuator to engage in said groove and shift said sleeve to connect the pinions differently with the carriage according to the desired letter spacing.

3. In a typewriting machine, the combination of a carriage, escapement mechanism for said carriage, said escapement mechanism including a sleeve including a plurality of pinions thereon, a ratchet wheel on said sleeve, back spacing mechanism to engage said ratchet wheel, said ratchet wheel having a groove in its periphery, means including an actuator to engage in said groove and shift said sleeve to connect the pinions differently with the carriage according to the desired letter spacing, an internal ratchet on said ratchet, an escapement shaft, and a pawl on said shaft to engage said internal ratchet.

4. In a typewriting machine, the combination of a carriage, escapement mechanism for said carriage including a shaft, a sleeve on said shaft, a plurality of pinions secured to said sleeve, a rack on said carriage to engage any one of said pinions, means to shift the sleeve axially of said shaft to carry any one of the pinions into cooperative relation with said rack, and two cooperative elements to back space the carriage, namely a ratchet secured to said sleeve, and a pawl to engage the ratchet, one of said elements being sufficiently wide to engage the other in any position of the sleeve.

FRANK H. TREGO.