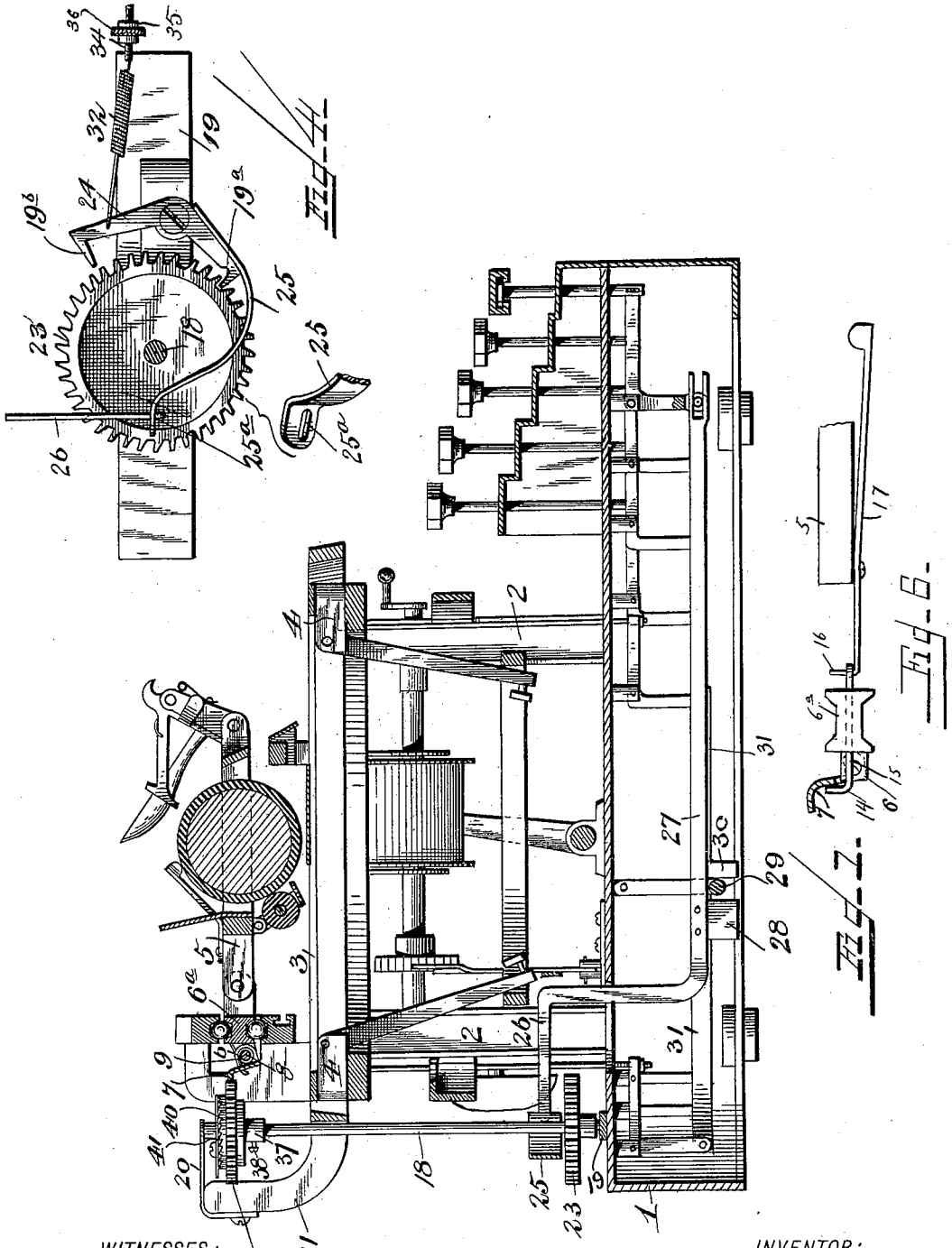
No. 626,936. Patented June 13, 1899.

E. S. SHIMER.

TYPE WRITER.

(Application filed Oct. 28, 1898.)

(No Model.) 2 Sheets—Sheet 1.



WITNESSES:

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INVENTOR:

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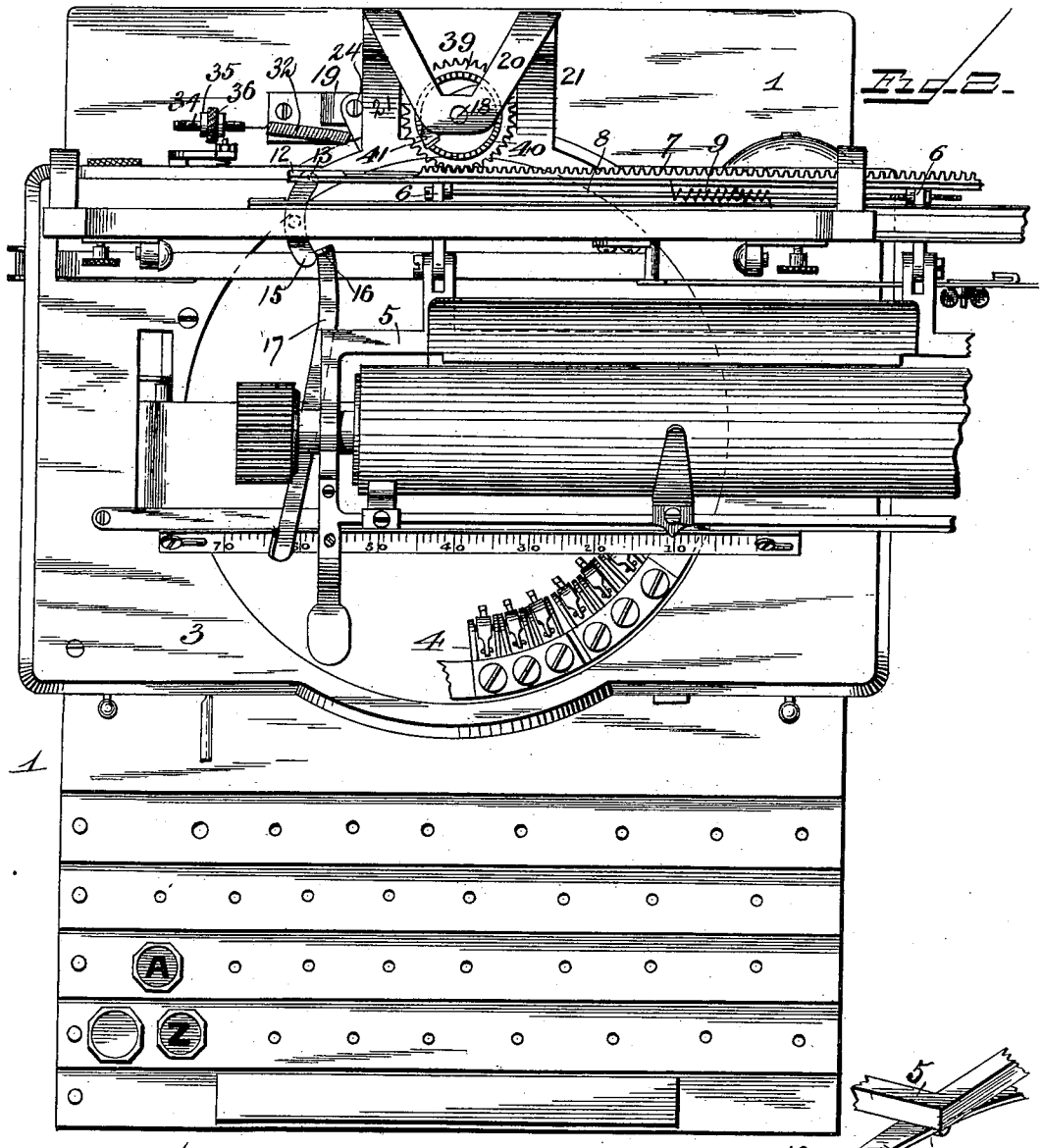

Fig. 2.

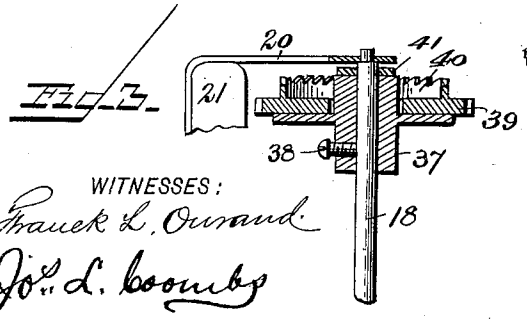

Fig. 3.

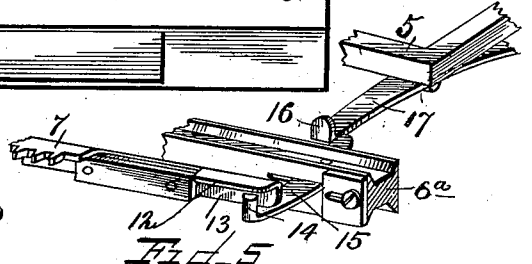

Fig. 5.

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UNITED STATES PATENT OFFICE.

ELMER S. SHIMER, OF MILTON, PENNSYLVANIA.

TYPE-WRITER.

SPECIFICATION forming part of Letters Patent No. 626,936, dated June 13, 1899.

Application filed October 28, 1898. Serial No. 694,765. (No model.)

To all whom it may concern:

Be it known that I, ELMER S. SHIMER, a citizen of the United States, residing at Milton, in the county of Northumberland and State of Pennsylvania, have invented new and useful Improvements in Type-Writers, of which the following is a specification.

My invention relates to the letter-spacing mechanism of type-writers; and its object is to provide improved means for feeding the paper-carriage forward at each depression and elevation of a key, the construction being such that the carriage is fed half the distance for the letter-space as the key is depressed and the remaining distance when the key is released and elevated, whereby the machine will work with less noise and tension, with greater rapidity and smoothness of touch, and with greater accuracy in letter-spacing.

The invention consists in the novel construction and combination of parts hereinafter fully described and claimed.

In the accompanying drawings, Figure 1 is a longitudinal sectional view of so much of a type-writer as is necessary to illustrate my invention. Fig. 2 is a plan view of the same. Fig. 3 is a detail perspective view of the letter-spacing mechanism. Fig. 4 is a plan view of the escapement-wheel and double rocking pawl. Fig. 5 is a detail perspective view of the means for tilting the spacer rack-bar. Fig. 6 is a detail end elevation showing the spacer rack-bar and means for throwing said bar out of engagement with the gear-wheel, the bar being shown in section.

In the said drawings, the reference-numeral 1 designates the frame of the machine, provided with uprights 2, which carry the upper horizontal plate 3, to which the type-bar ring 4 is secured.

The numeral 5 designates the paper-carriage, provided with the usual spring-barrel and spring for feeding it forward, line-spacing mechanism, and other accessorial parts. (Not shown, as they form no part of the present invention.)

Pivoted to lugs 6, formed with the traverse-rail 6^a of the paper-carriage, is an oscillatory letter-space rack-bar 7. Connected with said lugs is a rod 8, provided with a tension-spring 9, coiled around the same, one end of which is connected with said traverse-rail 6^a and the other end connected with said rack-bar. One end of said rack-bar is extended laterally, forming an arm 12, the end of which on the under side is cut away at 13. Engaging with this end of said arm is a pin 14 on the rear end of a curved lever 15, pivoted to the rail 6^a. Engaging with this lever is a lug 16 on the rear end of a lever 17, pivoted to the front portion of the paper-carriage. When the spacer rack-bar 13 is in normal position or in engagement with the gear-wheel 39, it will rest upon the lever 15. To disengage the said rack-bar from the gear-wheel to allow the carriage to be returned, the lever 17 is turned to the right, so as to operate lever 15, when the rear end of the latter will be moved to the right and the pin 14, engaging with the rack-bar 13, will turn it upwardly on its pivots and throw it out of engagement with the gear-wheel.

The numeral 18 designates a vertical shaft located at the rear end of the machine, the lower end of which is journaled in a plate 19, secured to the frame 1, while the upper end is journaled to a bracket 20, secured to the arms 21, formed with or secured to the plate 3. Secured to said shaft at its lower end is an escapement-wheel 23, with which are adapted to alternately engage the pallets 19 and 19^a of a double rocking pawl 24, pivoted intermediate its ends to the plate 19. Secured to the rear arm of said pawl is a spring-arm 25, having a slot 25^a near its free end, through which passes the end or arm 26 of the spacer-bar 27. This arm is extended downwardly at approximately a right angle and is then extended forwardly to the front of the machine, where it is connected with the usual spacer key or plate. This spacer-bar is provided with a downwardly-projecting lug 28, with which is adapted to engage a transverse bail 29, extending across and pivoted to the frame 1. This bail is adapted to be struck by a lug 30 on each key-bar 31 when the latter is operated by the depression of a key and to allow the spacer-bar to be returned to normal position when the key is released and elevated. Connected with the other arm of said rocking pawl is a coiled spring 32, the other end of which is secured to a screw-rod 34, passing through holes in lugs 35, secured to the upper side of the frame 1. Located

between said lugs is a wheel 36, through which said rod passes, by turning which the tension of the spring may be regulated.

Secured to the shaft 18, near the upper end, is a hub 37, held in place by a set-screw 38 and formed intermediate its ends with a circular flange or collar, upon which rests and is supported a gear-wheel 39, which engages with the spacer rack-bar. Formed with or secured to the upper face of said gear is a ratchet-wheel 40, with which engages one end of a spring-pawl 41, secured to the upper end of said hub. The said gear 39 is loose on the hub, while the pawl which engages with the ratchet-wheel thereof is fast.

The operation is as follows: In normal position the pallet 19^a of the rear arm of the rocking pawl is engaged with the escapement-wheel, holding it against rotation by the tension of the spring connected with the paper-carriage. When a key is depressed to print a character, the lug 30 of the key-bar connected therewith will force the bail 29 rearwardly, which in turn will, by pressing against the lug 28 of the spacer-bar, force the arm 26 rearwardly and rocking the rocking pawl 24, so that the pallet 19^a of the same will be disengaged from the escapement-wheel and the pallet 19^b of the other arm will be engaged therewith. During this operation the paper-carriage through the tension of its spring will be moved or fed forward half the distance of a letter-space, and the spacer rack-bar engaging with the gear 39 will turn the latter and the ratchet-wheel, pawl, and shaft. When the key is released, the operation will be reversed so far as the pallets are concerned, the pallet 19^a of the same being again engaged with the escapement-wheel and the pallet 19^b disengaged therefrom, and the paper-carriage moving forward to complete the letter-space. To return the carriage, it is simply pushed backward, the pawl 41 riding over the teeth of the ratchet and the shaft 18 remaining stationary, or the spacer-bar may be thrown out of engagement with the gear 39 by means of the levers 15 and 17.

From the above it will be seen that the paper-carriage is fed forward one-half the distance of a letter-space upon the depression of a key and the other half upon the release thereof. I prefer, however, that the carriage should not be fed forward quite one-half the distance of a letter-space on the depression of a key and a little more than one-half upon the release of the same, the movements being so proportioned that the carriage is fed the distance of a letter-space at one depression and elevation of a key. This differential feed is caused by the relation which the pallet 19^b, which is the escapement-pallet, bears to the teeth of the escapement-wheel, being so located with respect thereto that it has a longer stroke than the pallet 19^a, which is the holding-pallet.

From the above it will be seen that the letter-space is made by the depression and release of a key instead of being performed by the elevation of the key alone, as is usual. By this means the tension of the spring controlling the movement of the paper-carriage need not be so great as when the feed is effected by one movement, thereby rendering the machine less noisy, making the touch lighter, and otherwise adding to its efficiency.

By making the arm which connects the rocking pawl with the spacer key-bar of spring metal an important advantage is gained. It sometimes happens that the lugs of the key-bars which engage with the bail to operate the spacer key-bar and the rocking pawl when a key is depressed are not always in alinement with each other, so that a longer or shorter stroke is given to the spacer-bar, as the case may be, which interferes with the proper working of the machine. This is compensated for by the resiliency of the arm, which will give or yield when such variations in the alinement of the lugs occur.

Having thus fully described my invention, what I claim is—

1. In a type-writing machine, the combination with the paper-carriage, the pivoted spacer rack-bar, the intermittently-rotating spacer-shaft and connections between said spacer-shaft and spacer rack-bar, of the escapement-wheel secured to said shaft and the rocking lever adapted to engage therewith having two arms provided with pallets so constructed and arranged with respect to said escapement-wheel that a differential feed will be given to the paper-carriage at the depression and elevation of a key, substantially as described.

2. In a type-writing machine, the combination with the paper-carriage and the spacer rack-bar, of the spacer-shaft, the loose cog-wheel at the upper end thereof engaging with said rack-bar and provided with a ratchet on one face, the spring-pawl carried by said shaft and engaging with said ratchet and means for intermittently rotating said shaft, substantially as described.

3. In a type-writing machine, the combination with the paper-carriage, the spacer rack-bar, the spacer-shaft, the loose cog-wheel, the ratchet carried thereby and the spring-pawl, of the escapement-wheel, and the rocking lever having two arms provided with pallets so constructed and arranged with respect to the said escapement-wheel that a differential feed will be given to the paper-carriage at the depression and elevation of a key, respectively, substantially as described.

4. In a type-writer, the combination with the paper-carriage, the spacer rack-bar, the spacer-shaft, the loose gear-wheel thereon, the ratchet on one of the faces of said gear-wheel, and the spring-pawl connected with said shaft so as to rotate therewith, of the escapement-wheel secured to said spacer-shaft, the rocking pawl provided with two

arms, and means for operating said arms by the depression and elevation of a key, substantially as described.

5. In a type-writer, the combination with the paper-carriage, the spacer rack-bar carried thereby, the spacer-shaft, the loose gear-wheel, the ratchet-wheel connected therewith and the fixed spring-pawl, of the escapement-wheel, the rocking pawl provided with two arms, the spring-arm connected with one of said arms and the spacer key-bar connected with said spring-arm, substantially as described.

6. In a type-writer, the combination with the paper-carriage, the spacer rack-bar carried thereby, the spacer-shaft, the loose gear-wheel, the ratchet-wheel carried thereby and the fixed spring-pawl, of the escapement-wheel secured to said shaft, the rocking pawl provided with two arms, the coiled spring connected with one of said arms, the spring-arm connected with the other arm and the spacer key-bar, substantially as described.

7. In a type-writer, the combination with the paper-carriage, the spacer rack-bar pivotally connected therewith, the spacer-shaft, the hub and collar secured thereto, the loose gear-wheel supported by said collar, the ratchet-wheel carried by said gear and the spring-pawl engaging therewith, of the escapement-wheel secured to said shaft, the rocking pawl provided with two arms, the coiled spring connected with one of said arms, the spring-arm connected with the other arm and the spacer key-bar, substantially as described.

8. In a type-writing machine, the combination with the paper-carriage, the traverse-rail, the pivoted spacer rack-bar, cut away at one end, and means for moving said paper-carriage step by step, of the curved lever pivoted to the traverse-rail having a pin at one end, and the lever pivoted to the paper-carriage having a lug at the rear end engaging with the front end of said curved lever, substantially as described.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

ELMER S. SHIMER.

Witnesses:
H. E. ANGSTADT,
JAMES O. SHEARER.