No. 864,890. PATENTED SEPT. 3, 1907.

C. GABRIELSON.

TYPE WRITING MACHINE.

APPLICATION FILED MAY 13, 1904.

3 SHEETS—SHEET 1.

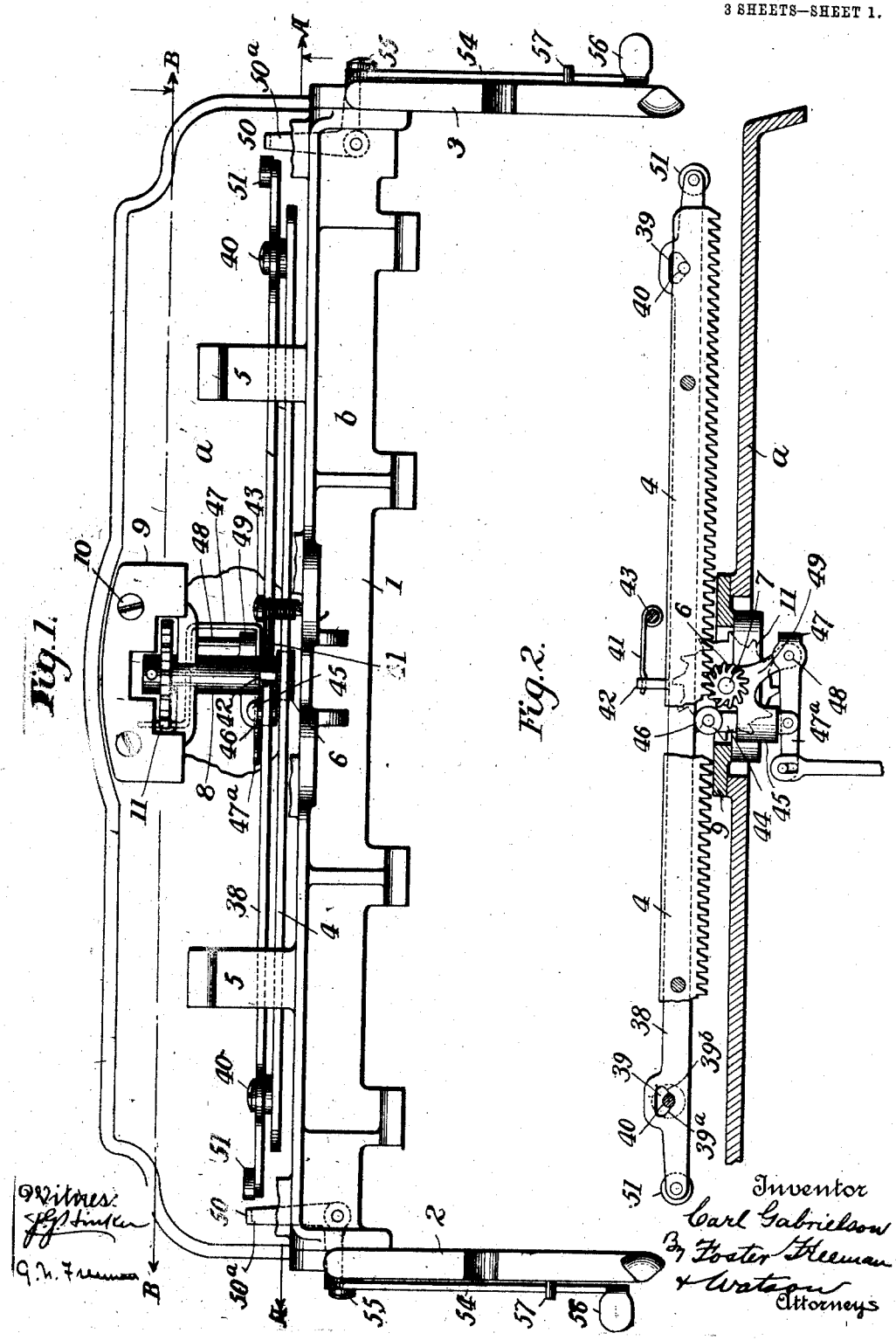

Fig. 1.

Fig. 2.

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3 SHEETS—SHEET 2.

Fig. 3.

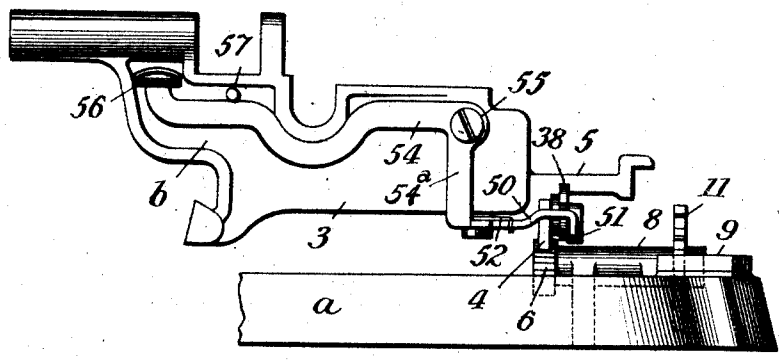


Fig. 5.

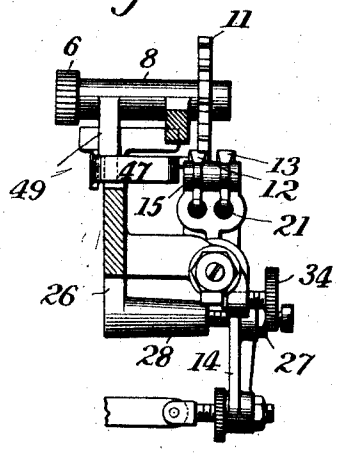


Fig. 6.

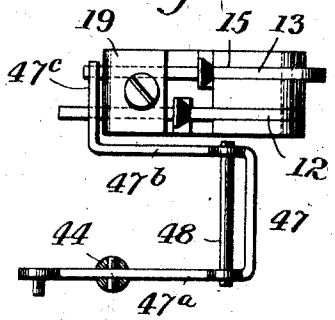
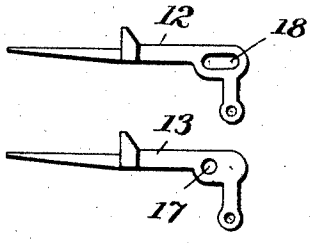


Fig. 7.



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3 SHEETS—SHEET 3.

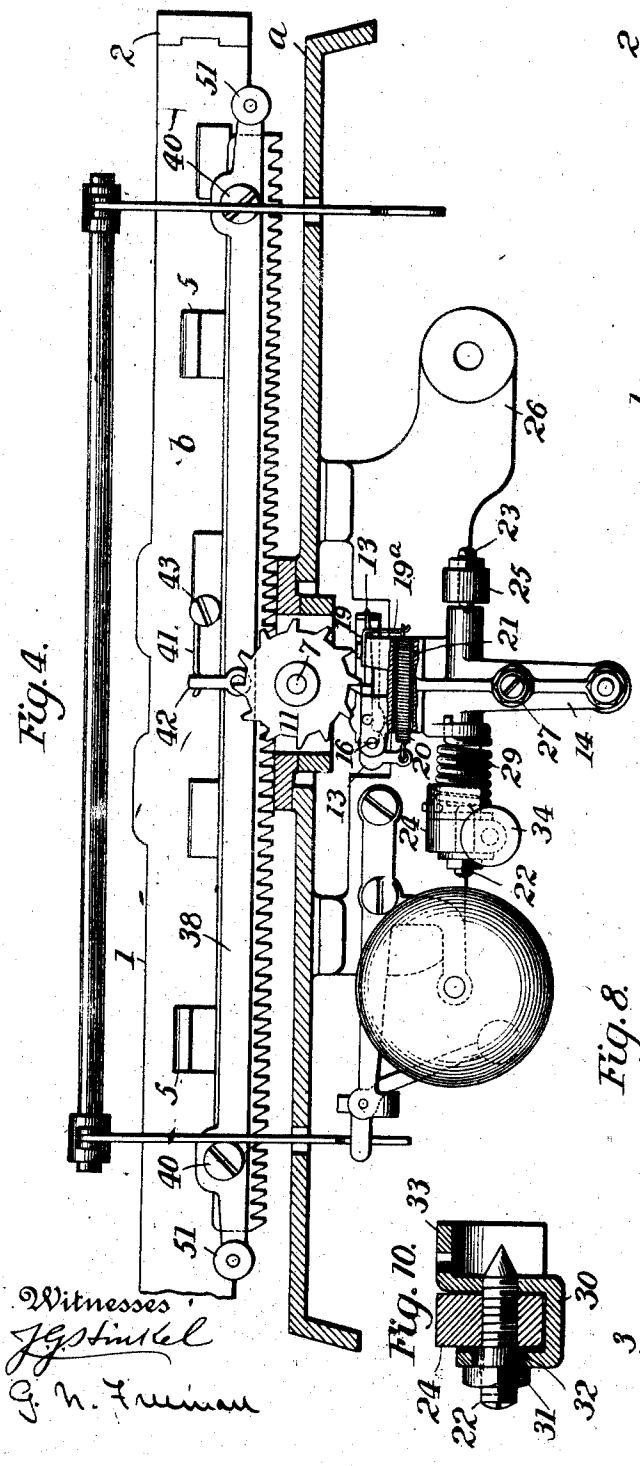

Fig. 4.

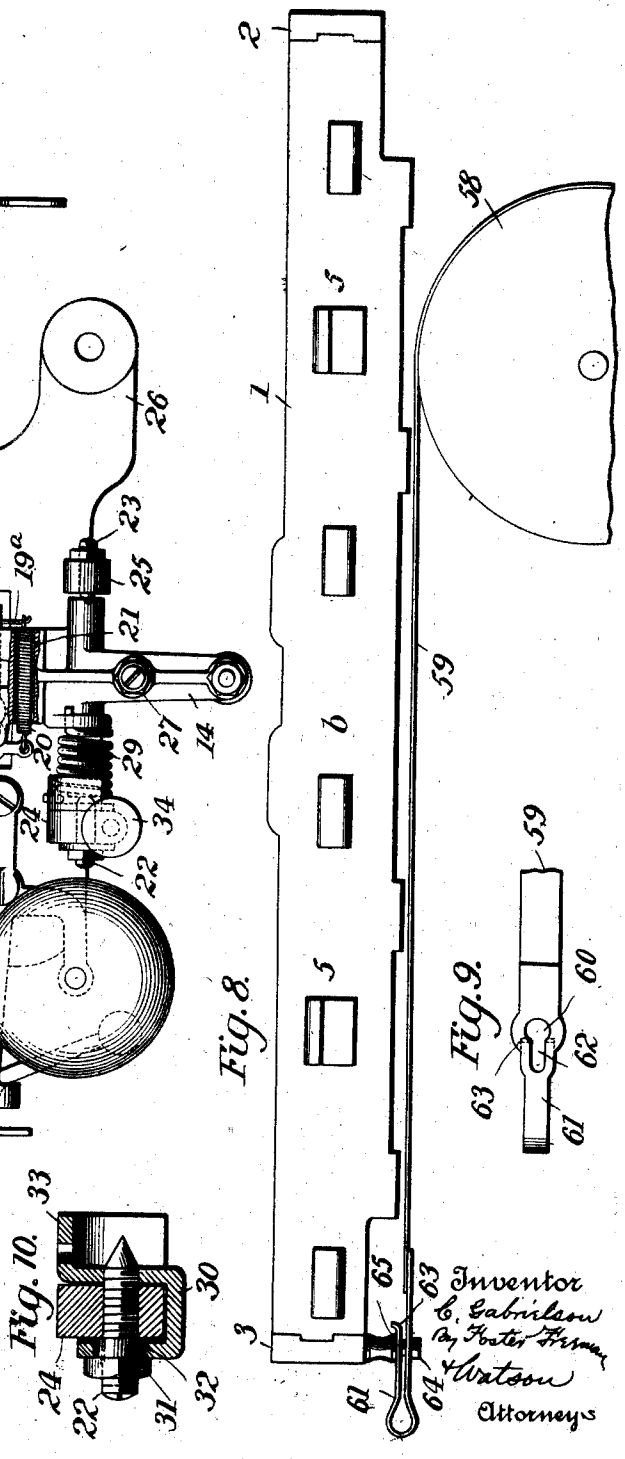

Fig. 8.

Fig. 9.

Fig. 10.

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UNITED STATES PATENT OFFICE.

CARL GABRIELSON, OF SYRACUSE, NEW YORK, ASSIGNOR TO L. C. SMITH AND BROS. TYPEWRITER COMPANY, OF SYRACUSE, NEW YORK, A CORPORATION OF NEW YORK.

TYPE-WRITING MACHINE.

No. 864,890. Specification of Letters Patent. Patented Sept. 3, 1907.

Application filed May 13, 1904. Serial No. 207,830.

To all whom it may concern:

Be it known that I, CARL GABRIELSON, a citizen of the United States, and a resident of Syracuse, county of Onondaga, State of New York, have invented certain new and useful Improvements in Type-Writing Machines, of which the following is a specification.

This invention relates particularly to the carriage feeding mechanism of typewriting machines.

The invention will be described in detail in the following specification reference being had to the accompanying drawing, in which,

Figure 1 is a top plan view of the carriage feeding and release mechanism, and portions of the main and carriage frames; Fig. 2 is a section on the line A—A of Fig. 1, partly broken away; Fig. 3 is an end view of the carriage looking toward the left in Fig. 1; Fig. 4 is a section on the line B—B of Fig. 1; Fig. 5 is an end view of the escapement devices looking toward the left in Fig. 2; Fig. 6 is a detail plan view of the escape pawls and releasing lever; Fig. 7 is a detail side view of the pawls; Fig. 8 is a front elevation of the carriage back bar, showing the carriage spring drum connected thereto, Fig. 9 is a detail view, showing the device for connecting the band to the carriage; and Fig. 10 is a detail of devices for adjusting the spring tension on the escapement rocker.

Referring to the drawing, *a* indicates the top plate of the main frame of the machine, and *b* indicates the carriage frame, comprising the back bar 1 and side or end bars 2 and 3. In order to simplify the drawings, the rails upon which the carriage moves transversely of the main frame, are omitted. A rack bar 4 is secured to arms 5 projecting rearwardly from the carriage frame, and the teeth upon said bar are constantly engaged by a pinion 6 secured upon a shaft 7 which is journaled in a bearing 8, extending at right angles to the rack and secured to a bracket 9 which is attached to the top plate of the machine frame by screws 10. An escapement wheel 11 is secured to the rear end of the shaft 7, and dogs 12 and 13 upon a rocker 14 alternately engage the teeth upon the escapement wheel and permit the latter to turn step by step when the rocker arm is vibrated by the operation of the key levers, the carriage being impelled to the left by the carriage spring, in the usual manner, one letter space, each time a tooth upon the escapement wheel is released. The dogs which coöperate with the escapement wheel to feed the carriage, are shown in side view in Fig. 7. Each dog has the form of a bell crank lever with a tooth projecting upwardly from about the center of its longer arm, as shown, and these dogs are arranged within parallel vertical grooves 15 in the upper part of the rocker, as shown in Figs. 5 and 6. The holding dog 13 is pivoted within its groove in the rocker upon a pin 16 passing through its eye 17 so that it may oscillate vertically without longitudinal movement in the groove. The stepping dog 12 has a slot 18, through which the pin 16 extends, and this dog may oscillate vertically and also move longitudinally within its slot in the rocker, the latter movement being limited by the length of the slot. A plate 19, secured on top of the rocker over the free ends of the dogs, forms a stop to limit the upward movement of the dogs. The short arms of the dogs, as shown, are connected by springs 20, extending through openings 21 in the rocker, to a portion of the plate 19 extending downwardly at the opposite side of the rocker. These springs normally hold the dogs in their uppermost positions against the stop 19, but the dogs are free to swing downwardly when the carriage is moved to the right. Means are provided for positively moving the dogs out of the path of the teeth of the escape wheel during the return movement of the carriage, which means will be described hereinafter.

The rocker 14 is journaled upon adjustable threaded pivots 22, 23, which turn in threaded openings in lugs 24, 25, of bracket 26. The rocker is normally held with the rear or stepping dog 12 in engagement with the escape wheel and the adjustable stop 27 seated against the abutment 28 on bracket 26 by means of a coiled spring 29. Spring 29 has one end connected to the rocker and its other end connected to the tension adjusting device 30. The pivot screws 22, 23, are provided with lock nuts and the lock nut 31 has a journal 32 which forms a bearing for one leg of the U-shaped tension adjusting device 30. The other leg of this device is pivoted on the pivot screw 22 (Fig. 10). One end of the spring 29 is passed through a hole in an extension 33 of the device 30. The extension or housing, 33 is a portion of a cylinder having an inner diameter about equal to the outer diameter of spring 29 and said extension thus forms a means for holding the spring concentric with the pivot 22 and free from the shaft of the rocker, thus preventing frictional contact of the spring and the rocker. The tension device 30 is adjusted about its pivot to increase or decrease the tension of the spring 29 by means of an adjusting screw 34 mounted in the lug or bracket 24 (Figs. 4 & 5). It will be noted that the journal 32 is slightly thicker than the leg of the device 30 permitting said device to move freely when the lock nut 31 is tight against the bracket 24. By means of the screw 34, the tension of the rocker and consequently the tension of the key levers which move the rocker through the usual universal bar may be adjusted.

In order to release the carriage from the escapement mechanism for the purpose of moving the carriage in either direction, without operating the keys, I provide a release bar 38 which is mounted upon the back of the rack bar, 4. The release bar has, near each end, a slot

or opening 39 extending longitudinally of the bar, and the lower wall of each opening is inclined downwardly from its ends to the center, forming cam surfaces 39^a and 39^b. The release bar is held in sliding engagement with the rack bar by means of shouldered screws 40, extending through the triangular openings 39. The release bar is normally supported in upper central position, as shown in Fig. 2, with the lower angles of the slots 39 bearing against the screws or studs 40, by means of a spring 41 connected to a link or stud 42 upon the release bar, said spring being supported on a stud 43 which is secured to the back bar 1 of the carriage. Below the release bar is arranged a vertically movable slide 44 mounted in a lug 45 projecting laterally from the bearing in which the escapement shaft is supported, and this slide carries at its upper end a roller 46 which bears against the lower edge of the release bar, and the lower end of said slide is pivotally connected to an arm 47^a of a two-armed lever 47. This lever is, as shown in Figs. 1, 2, and 6, mounted upon a pivot pin 48 passing through both of its arms 47^a and 47^b, said pivot pin being supported within arms 49 of the escapement shaft bracket. The arm 47^b has a part 47^c extending over the free ends of the dogs 12 and 13.

A link 47^d, shown in Fig. 2, forms part of a connection between the release lever 47 and a carriage release key in the key-board.

It will be seen that when the release bar 38 is moved, either to the right or to the left, the cam surfaces of the openings 39 will cause the bar to be depressed against the action of the spring 41, and this depression of the release bar will move the slide 44 downwardly, rocking the lever 47, and the part 47^c of said lever will depress the dogs, thus releasing them from the escapement wheel so that the carriage may be moved freely in either direction.

In order to conveniently operate the release bar, bell crank levers 50 are pivotally connected to the under side of the back bar 1, and the arms 50^a of said levers are normally held in line with rollers 51 upon the ends of the release bar, and at a short distance therefrom, as shown in Fig. 1, by suitable springs 52. The levers 50 are movable into and out of engagement with the rollers upon the release bar, by means of bell crank levers 54 pivoted at 55 on the ends of the carriage, the horizontal arms of said levers having finger pieces 56, and the vertical arms 54^a of said levers bear against the levers 50 which press the horizontal arms of the levers 54 upwardly into their normal positions against stop pins 57.

It will be obvious that the depression of a lever 54, at either end of the machine, will cause the bell crank 50, at that end of the machine, to move the release bar and thus cause the dogs to become disengaged from the escapement wheel. As the levers 50 normally stand at some distance from the ends of the release bar, it will be evident that the operation of the release bar by one of said levers will not be interfered with by the lever at the opposite end of the bar.

The carriage *b* is connected with the usual spring drum 58 by means of a band 59. At the free end of the band is a hole 60 resembling a key hole, that is, consisting of a slot having an enlarged end. Beyond the opening 60 the band is bent backwardly forming a spring tongue 61 having in its end a notch 62 corresponding in width with the slot 60. The tip ends of the branches inclosing the notch 60 are bent upward as shown at 63 (Figs. 8 and 9). The band is connected to a headed pin 64 on the carriage as illustrated in Fig. 8. The band is always under tension which draws the pin 64 into the small end of the slot 60. The pin also normally occupies the notch 62, which registers with the small end of the slot 60, and the upturned point 63 locks the parts in this position and prevents accidental disengagement of the band from the carriage. When it is desired to disengage the band to free the carriage this may be done instantly by pressing down the spring tongue 61 to free the point 63 from the enlargement 65 of the pin and then drawing the band to the left (Fig. 8) until the head of the pin registers with the enlargement of the slot 60. This enlargement is of such size as to permit the head of pin 64 to pass through it. The band may thus be instantly disconnected from the carriage and as quickly connected with it.

It will be understood that the rocker 14 is suitably connected with the key levers so that it will be rocked whenever a key lever is depressed. This construction is common in the art, the usual practice being to connect the rocker with the universal bar. It will therefore be understood that each time a key lever is depressed to print a character the rocker is vibrated and the carriage permitted to move one step, to place it in position to receive the next type impression.

It will be evident that various changes may be made in the details of construction and arrangement of my invention of which one embodiment is herein illustrated and described.

Therefore, what I claim and desire to secure by Letters Patent is,

1. In a typewriting machine, the combination with the carriage feed rack, the pinion engaging said rack and the ratchet wheel connected with the pinion, of a rocker, a pair of feed pawls independently pivotally connected with the rocker and adapted to coöperate with the ratchet wheel, a lever arranged to engage said pawls and withdraw them from the path of the ratchet wheel and a release bar for operating said lever in any position of the carriage.

2. In a typewriting machine, the combination with the carriage, of a carriage release device comprising a bar having two pairs of oppositely inclined cam surfaces, pins connecting said bar loosely with the carriage and cooperating with said cam surfaces, a spring for holding said surfaces against said pins, and means upon the carriage for moving said bar longitudinally, for the purpose set forth.

3. In a typewriting machine, the combination with the carriage, of the release bar having triangular openings near its ends, pins passing through said openings, a spring centrally connected with the bar to hold it in normal position, and means upon the carriage for moving said bar longitudinally to effect the release of the carriage.

4. In a typewriting machine, the combination with the carriage feed ratchet and pawls, of the release lever arranged to withdraw the pawls from the ratchet, the release bar on the carriage, and means whereby the operation of the bar longitudinally in either direction effects the rocking of the lever and withdrawal of the pawls from the ratchet.

5. In a typewriting machine, the combination with the carriage and its feed mechanism, of means for releasing the carriage from its feed mechanism comprising a movable bar provided with means adapted to release said carriage when the bar is moved in either direction longitudinally.

6. In a typewriting machine, the combination with the carriage and its feed mechanism, of a bar provided with means to disconnect the carriage from its feed mechanism at any desired point in the travel of the carriage when

said bar is moved from mid-position, and means to normally hold said bar in mid-position.

7. In a typewriting machine, the combination with the carriage and its feed mechanism, of the release bar extending longitudinally of the carriage, and means at each end of the carriage for operating said release bar, said bar being provided with means adapted to release the carriage when it is moved in either direction from its mid position.

8. In a typewriting machine, the combination with the carriage and its feed mechanism, of a release bar longitudinally arranged upon the carriage, pins or projections upon the carriage, reverse inclines or cams upon the bar coöperating with each of said pins or projections, a spring for normally holding said bar in mid position, and means for operating the bar in either direction from mid position to release the carriage.

9. In a typewriting machine, the combination with the carriage and its ratchet, of a rocker, feed pawls carried by the rocker, a coiled spring surrounding the rocker shaft and connected with the rocker, and a cylindrical housing surrounding said spring and holding it from contact with the rocker shaft, the stationary end of said spring being connected to said housing.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

CARL GABRIELSON.

Witnesses:

C. M. STEVENS,

C. F. PARSONS.