Dec. 8, 1936. F. EIBERT 2,063,372

AUTOMATIC SHIFT RELEASE DEVICE FOR TYPEWRITERS

Filed Jan. 4, 1935 2 Sheets-Sheet 1

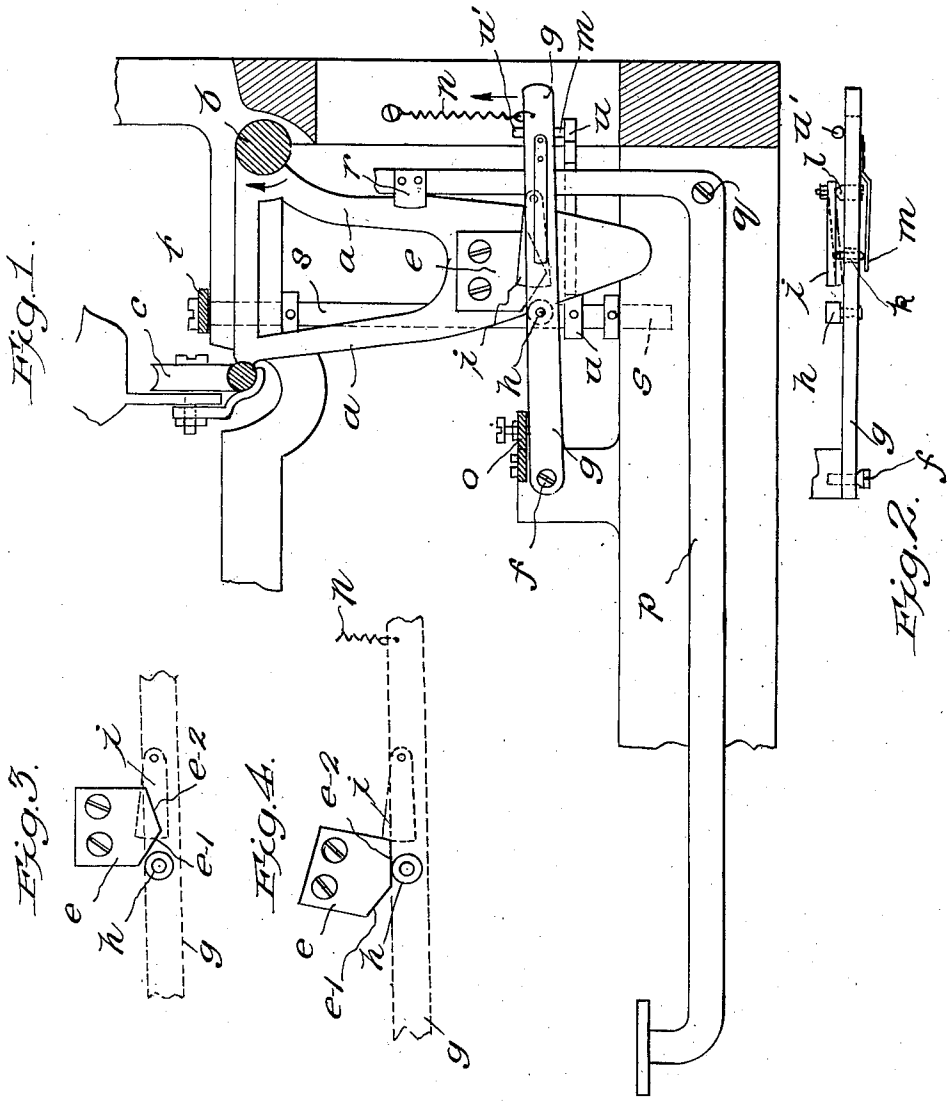


Fig. 1.



Fig. 2.



Fig. 3.



Fig. 4.

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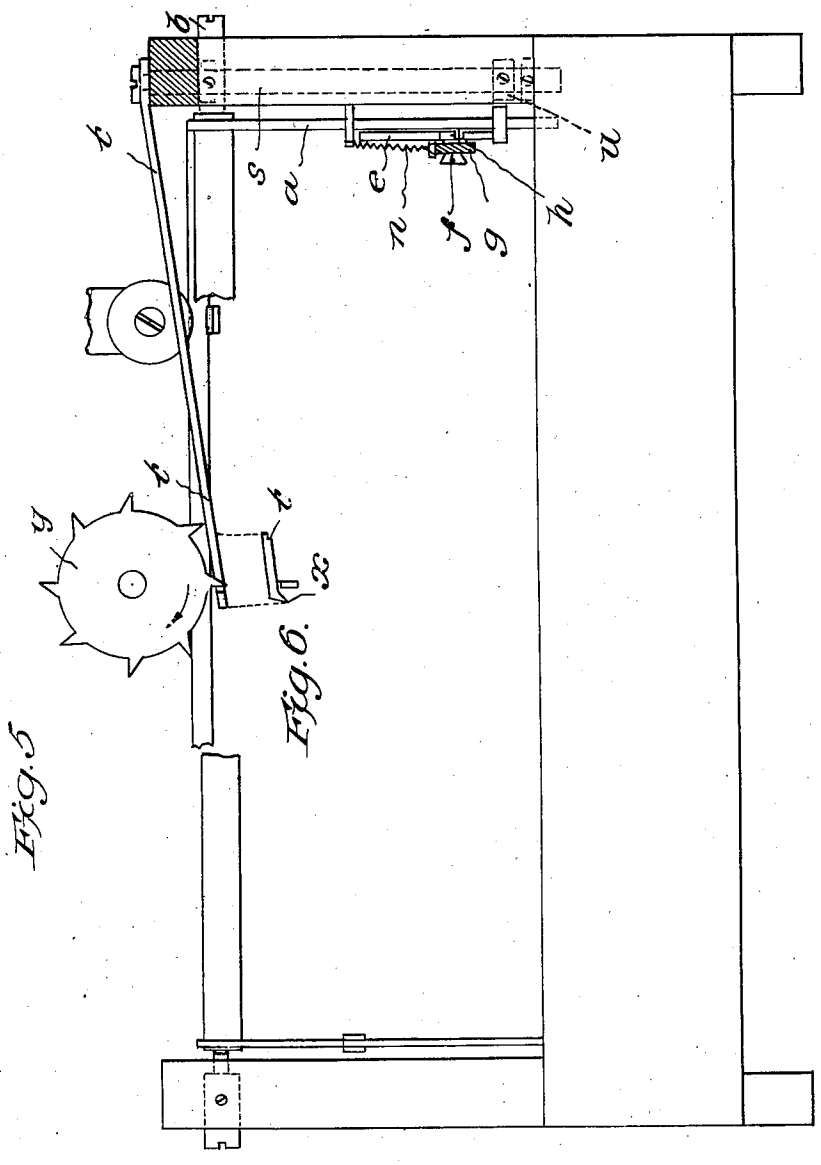



Fig. 6.

Fig. 5

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## AUTOMATIC SHIFT-RELEASE DEVICE FOR TYPEWRITERS

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Application January 4, 1935, Serial No. 384

6 Claims. (Cl. 197—73)

The present invention relates to an automatic shift key and release for typewriters, and, more particularly, to an attachment for typewriter shift key structures which effects a combination operation of the shift key and the release.

It is well known that the conventional shift key structures consisted essentially of one or of a plurality of shift keys with levers associated therewith which when depressed lifted up the paper carriage or the type levers. When one of the keys of the typewriter was struck while the paper carriage or the set of type levers was in a raised position, a capital letter or sign has been printed. As is known, this conventional arrangement had the disadvantage that it had to be operated very accurately. If the key lever was operated a little before the paper carriage reached its elevated position, the type printed did not come in line with the others, and the same thing happened if the type was printed after the carriage was already released and partly returned to its initial position of rest. This occurred especially frequently at high writing speeds when it was difficult to correctly time the operation and the release of the shift key with the depression of the key lever. Although many proposals have been made to eliminate this disadvantage of conventional typewriters, as far as I am aware, none of these suggestions has been completely satisfactory or successful.

It is an object of the present invention to provide an improved shift key arrangement for typewriters which is completely satisfactory and which permits the printing of the letters exactly on the line even in the case when the typewriter is operated at a great speed and the depressed key lever is not accurately timed to the operation of the shift key.

It is another object of the present invention to provide a shift key arrangement for typewriters which shifts the paper carriage or other corresponding part of the typewriter to its elevated position with a single depression of the shift key and maintains the same locked in this position until the corresponding type has been actually printed, when the carriage will be automatically returned to its initial position.

The invention also contemplates the provision of a simple attachment for conventional typewriters for making the operation of the shift key automatic.

Other objects and advantages of the invention will become apparent from the following description taken in conjunction with the accompanying drawings, in which:—

Fig. 1 is a vertical section, somewhat fragmentary, through a typewriter showing an embodiment of my invention;

Fig. 2 illustrates a top elevational view of the lever shown in Fig. 1;

Fig. 3 depicts the cam member shown in Fig. 1, in its initial position of rest;

Fig. 4 shows the cam member in its shifted and locked position;

Fig. 5 is a fragmentary, elevational view of the rear of a typewriter illustrated in Fig. 1; and

Fig. 6 depicts the end of the lever engaging the teeth of the ratchet wheel shown in Fig. 5.

According to the principles of my invention, I provide a cam-like member on the carriage carrier which is moved or shifted by means of the shift key lever and also a resiliently pivoted control lever which preferably has a little roller adapted to engage a surface of the cam-like member and capable of automatically carrying over the carriage carrier to its shifted position after this displacement has been initiated by the depression of the shift key. Locking means are arranged on the control lever to lock the cam-like member and the carriage in the shifted position so that it is not necessary to keep the shift key continuously depressed. To return the carriage to its initial position after the type has been impressed on the paper on the carriage, I provide an automatic releasing means which cooperates with the ratchet wheel or other equivalent part of the typewriter. After the type has been printed and after the ratchet wheel has been turned by one tooth under the influence of the carriage spring, the releasing means will automatically become operative and will release the locking means so that the carriage due to its weight will drop back to its initial position of rest.

Referring now more particularly to the drawings, a paper carriage carrier "*a*" arranged in the conventional manner in the frame of a typewriter is pivoted in a pivot "*b*". The carrier "*a*" is engaged by an end "*r*" of a shift key lever "*p*" which is pivoted in a pivot "*q*" so that when the shift key is depressed the carrier is swivelled in the direction of the arrow and lifts up the paper carriage and a roller "*c*" associated therewith. A cam-like member "*e*" having two angular surfaces "*e*—1" and "*e*—2" is attached to the lower part of the carrier "*a*" by means of screws or other appropriate fastening elements. A control lever "*g*" is arranged before member "*e*" and is pivoted in screw "*f*" in such manner that the lever can swing up and down and is also capable

of slight displacement vertically to the plane of Fig. 1. A set screw "o" and a spring "n" maintain the control lever in the position shown in the drawing. A small roller "h" is provided on control lever "g" and is adapted to engage the surfaces "e—1" and "e—2" on cam-like member "e". The control lever carries a locking member "i" displaceably held on the lever by a screw "l" and a pin "k" protruding through a corresponding opening of the lever. A flat spring "m" presses against pin "k" and thereby resiliently holds the locking member "i" at a little distance from the control lever. The releasing means essentially comprises a shaft "s" rotatably arranged in the frame of the typewriter having a lever "t" rigidly connected thereto at one end and a lever "u" carrying a pin "u—1" connected at its other end. The far end of lever "t" is provided with an angular surface "x" adapted to be engaged by one of the teeth of ratchet wheel "y". The pin "u—1" is in the proximity of control lever "g" and is leaning against the inner surface thereof.

From the preceding description the operation of my automatic shifting device will be readily understood by those skilled in the art. When the shift key lever "p" is depressed it will turn around its axle "q" and its other end "r" will press against the carrier "a". The carrier will be displaced around axle "b" in the direction of the arrow whereby surface "e—1" on the cam-like member "e" will engage roller "h" on control lever "g" until the roller contacts the surface "e—2" on the cam-like member. Due to the tension of spring "n" on the control lever "g" the roller will press against the surface "e—2" and will lift thereby the carrier and also the paper carriage associated therewith in its elevated or shifted position. After the carrier has obtained its shifted position the locking member "i" under the pressure of the resilient flat spring "m" on pin "k" will arrive to its position indicated in Fig. 4 and will lock the carrier in its shifted position. It is now possible to impress the desired capital letter or the like on the paper carried by the carriage by depressing the corresponding key of the typewriter without the necessity of keeping the shift key depressed. After the desired letter has been impressed, the ratchet wheel will be displaced by one tooth in the conventional manner under the influence of the carriage spring. The moving tooth during its displacement will engage the wedge-like end "x" of lever "t" and will cause a slight rotary displacement of the shaft "s". At the same time the lever "u" rigidly attached to the other end of shaft "s" will be displaced and the pin "u—1" at its end will move the control lever "g" vertically to the plane of Fig. 1 and thereby will throw roller "h" out of engagement with the cam-like member "e". Of course, this will also move the locking member "i" away from the cam-like member so that in consequence of its weight the carriage will drop back to its initial position of rest. In this position of rest the locking means "i" is lying close to the inner surface of control lever "g" as this is indicated by the dotted lines in Fig. 2, and is in resilient contact with the surface of the cam-like member "e".

Although I have described my invention in connection with an illustrative embodiment, variations and modifications may be resorted to by those skilled in the art without departing from the principles of my invention as described herein and set forth in the appended claims. All of these variations and modifications are to be considered as being within the true scope of my invention as defined by the appended claims.

I claim:

1. In a typewriter having a spring-powered ratchet wheel, the combination comprising a paper carriage, a carrier associated with the said paper carriage, a shift key co-operating with said carrier for lifting up said carriage, locking means for said carrier for locking the same after its shifted position has been reached, and releasing means actuated by the movement of said ratchet wheel for retracting said locking means after a type has been printed on a platen of said typewriter.

2. In a typewriter having a spring powered ratchet wheel, the combination comprising a paper carriage, a carrier associated with the said paper carriage, a shift key co-operating with said carrier for lifting up said carriage, a member having angular surfaces mounted on said carrier, resilient means engaging said surfaces and adapted to carry the paper carriage to its shifted position after its movement has been initiated by the shift key, locking means locking said carrier in its shifted position, and releasing means actuated by the movement of said ratchet wheel for retracting said locking means whereby said paper carriage will be automatically returned to its initial position after a type has been printed on a platen of said typewriter.

3. In a typewriter having a spring-powered ratchet wheel, the combination comprising a paper carriage, a carrier associated with the said paper carriage, a shift key co-operating with said carrier for lifting up said carriage, a cam-like member mounted on said carrier, a resiliently mounted control lever having a part engaging said cam-like member to carry the paper carriage to its shifted position after its movement has been initiated by the shift key, locking means on said control lever to lock the carriage after its shifted position has been reached, and releasing means operatively associated with said ratchet wheel for releasing said locking means on the movement of said ratchet wheel, whereby the paper carriage will be automatically returned to its initial position of rest after a type has been printed on a platen of said typewriter.

4. In a typewriter having a spring-powered ratchet wheel, the combination comprising a paper carriage, a carrier associated with the said paper carriage, a shift key co-operating with said carrier for lifting up said carriage, a cam-like member mounted on said carrier, a resiliently mounted control lever having a roller engaging said cam-like member to carry over the paper carriage to its shifted position after its movement has been initiated by the shift key, a locking means including a resiliently displaceable plate on said control lever to lock the carriage after its shifted position has been obtained and a releasing means actuated by a tooth of the ratchet wheel for releasing said locking means on the movement of said ratchet wheel whereby the paper carriage will be automatically returned to its initial position of rest after a type has been printed on a platen of said typewriter.

5. In a typewriter having a spring-powered ratchet wheel, the combination comprising a paper carriage, a carrier associated with the said paper carriage, a shift key co-operating with said carrier for lifting up said carriage, a cam-like member having two angular surfaces mounted on said carrier, a spring-held pivoted lever capa-

ble of up and down movement and of slight lateral displacement having a roller mounted thereon, said roller engaging said angular surfaces on the said cam member and carrying over the paper carriage to its shifted position after its movement has been initiated by the shift key, a locking means including a resiliently displaceable plate on said control lever to engage and to lock said cam-like member after the shifted position has been reached, and a releasing means actuated by a tooth of the ratchet wheel on the movement thereof adapted to laterally displace said control lever whereby said locking means will be thrown out of engagement and the paper carriage will automatically drop back to its initial position of rest after a type has been printed on a platen of said typewriter.

6. In a typewriter having a spring-powered ratchet wheel, the combination comprising a paper carriage, a carrier associated with the said paper carriage, a shift key co-operating with said carrier for lifting up said carriage, a cam-like member having two surfaces at an angle to each other mounted on said carrier, a spring-held pivoted lever capable of up and down movement and of slight lateral displacement having a roller mounted thereon, said roller engaging said angular surfaces on the said cam member and carrying the paper carriage to its shifted position after its movement has been initiated by the shift key, a locking means including a resiliently displaceable plate on said control lever to engage and to lock said cam-like member after the shifted position has been reached, and a releasing lever having a wedge-like surface at one end engaged by a tooth of the ratchet wheel on the movement thereof, said lever having a pin at the other end adapted to laterally displace said control lever whereby said roller and said locking means will be thrown out of engagement with the said cam-like member and due to its weight the paper carriage will automatically drop back to its initial position of rest after a type has been printed on a platen of said typewriter.

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