

May 31, 1960

H. F. NICCOLLS

2,938,618

ZONE CONTROLLED CARRIAGE RETURN MECHANISM FOR TYPEWRITERS

Filed Jan. 8, 1959

Fig. 1

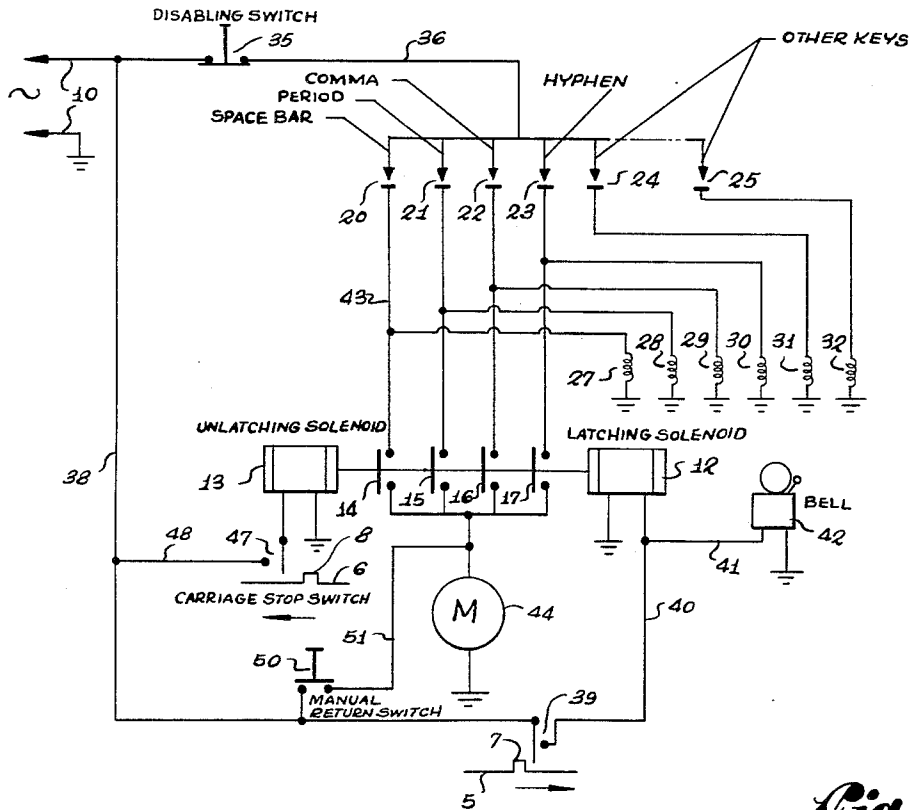


Fig. 2

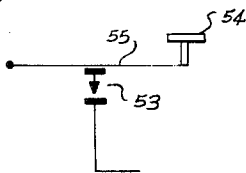
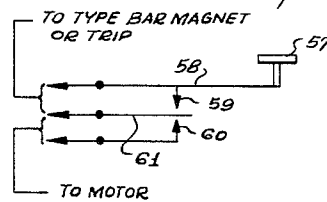


Fig. 3



INVENTOR.
HERBERT F. NICCOLLS
BY
Chas. R. Goshaw

1

2,938,618

**ZONE CONTROLLED CARRIAGE RETURN
MECHANISM FOR TYPEWRITERS****Herbert F. Niccolls, 15917 Victory Blvd.,
Van Nuys, Calif.****Filed Jan. 8, 1959, Ser. No. 785,749****11 Claims. (Cl. 197—66)**

This invention relates to carriage return mechanisms for typewriting machines and particularly to mechanisms for automatically returning a typewriter carriage from predetermined positions within a certain zone.

Automatic carriage return mechanisms for typewriters are known, as evidenced by U.S. Patent No. 1,389,718, of September 6, 1921, this patented mechanism being a mechanical device for actuating a motor for returning the carriage to its starting or left-hand margin position. The present invention is an all-electric system wherein at the usual margin position indicated by a bell, circuits are set up which will return the carriage when a proper line-ending key, such as the space bar, period key, comma key, hyphen key, or any other selected key is actuated. With the increasing use of electrical typewriters, the present invention may be easily added to the typewriter circuit to obtain several advantages. Some of these advantages are an increase in volume and efficiency by permitting the operator to forget the right-hand margin positioning. Also, no operating time is lost by carriage operation and it is substantially unnecessary for the operator to move his hand out of typewriting position to punch a carriage-return button. When the operator knows that the carriage will return at the proper point, there is no automatic slow-down when approaching the right-hand margin.

The principal object of the invention, therefore, is to facilitate the operation of electric typewriters.

Another object of the invention is to provide an improved automatic carriage return mechanism for typewriters.

A further object of the invention is to provide an electrical improved carriage return mechanism for typewriters which will return the typewriter at any point within a predetermined zone under control of a selected key.

A better understanding of this invention may be had from the following detailed description when read in connection with the accompanying drawings, in which:

Fig. 1 is a combination schematic and diagrammatic circuit embodying the invention;

Fig. 2 is a diagrammatic detail view showing one form of electrical contact; and

Fig. 3 is a diagrammatic detail view showing another form of electrical contacts.

Referring, now, to the drawings in which the same reference numerals indicate the same elements, a typewriter carriage is indicated by the lines 5 and 6, the carriage having one projection 7 thereon adjacent the right-hand end of the carriage, and a projection 8 thereon adjacent the left-hand end of the carriage, these projections being adjustable on the carriage in any suitable manner.

Power is supplied to the typewriter over conductors 10 which may be connected to the usual 110-volt alternating current house supply. The carriage-return operation of the circuit is controlled by a latching relay having a latching solenoid portion 12 and an unlatching solenoid portion 13, the two portions being connected by an armature

2

with plural contact elements 14, 15, 16, and 17. Any commercial type of latching relay with sufficient contacts may be used. The spacebar, period, comma, and hyphen contacts are shown at 20, 21, 22, and 23, while two other key contacts are shown at 24 and 25, it being understood that all of the keys operate similar contacts in the normal writing operation. The form of these contacts and keys may be as shown in Fig. 2, the contact 53 being made by a key 54 on a pivoted arm 55.

- 10 For operating the typewriter type bars and spacing mechanism, each of the contacts, such as 20—25 and the others, when closed energize their respective magnetic coils 27, 28, 29, 30, 31, and 32. The energy for the magnetic coils 27—32 is provided from the A.C. source 10 over a disabling switch 35, conductor 36, whichever key contact 20—25 is closed, and to the respective coils 27—32 back to the ground side of the circuit. Thus, in the normal operation of one type of typewriter, the key contacts will be made and the magnetic coils energized in accordance with the actuation of the keys. In typewriters using a mechanical "knockoff" system in which the type bars are driven by a motor, the magnetic coils 27—32 are not used. In such a system, the contacts 20—23 are added to the typewriter for energizing the motor 44.

- Another power circuit from the source 10 is over conductor 38, a carriage-operated switch 39 when closed, conductor 40, conductor 41, and the typewriter bell 42 back to ground. A parallel circuit is over conductor 40, the latching solenoid portion 12 of the latching relay and back to ground. Thus, when the carriage-operated switch 39 is closed, this switch being a momentary switch which permits the carriage to continue to the right, the bell sounds momentarily and the latching solenoid portion 12 of the latching relay is energized to move its switch contacts 14—17 to the right. The closing of these contacts permits energy to be impressed on motor 44 when any one of the keys 20—23 is actuated. Should the space bar 20 be actuated, energy from the source 10 will be impressed on motor 44 over the closed contacts 20, conductor 43, closed contacts 14, and the motor 44 to ground. The motor 44 thus returns the carriage to its left-hand margin position. Should either the period, comma, or hyphen key be pressed after the latching relay solenoid portion 12 has been energized, the motor 44 will also be energized and the carriage will be returned to its left-hand margin position. Thus, the operator may disregard the right-hand margin position of each line, as the carriage will return at the proper line ending as determined by the space bar, period, comma, hyphen, or any other selected key.

- Because of the rapid action of the type bars and the inertia of the motor actuating the carriage, the period, comma, hyphen, or other selected key, will print its character before the carriage is moved by the motor. Also, serially-arranged contacts for the keys could be used whereby the contacts for actuating the comma, period, and hyphen characters would be made prior to the motor energizing contacts. Such a system is shown in Fig. 3, whereby the key 57 on pivoted bar 58 closes contacts 59 to actuate a type bar before contacts 60 are closed to energize the carriage return motor. The switch arm 61 is resilient.

- Now, when the carriage is returned to its left-hand margin position, the projection 8 on the carriage will momentarily close a switch 47 which will place power on the unlatching solenoid portion 13 of the latching relay over conductor 38, conductor 48, and the unlatching portion 13 of the relay to ground. The energization of portion 13 will open the switches 14, 15, 16 and 17 of the latching relay and restore the keyboard to its normal operating condition so that actuation of the space bar,

3

period, comma, or hyphen keys will not return the carriage until projection 7 again closes switch 39. Thus, with the above-described circuit, the bell position margin may be set at any desired point to provide a zone of any desired number of remaining spaces, such as the usual five, six, or seven spaces, after the sound of the bell, the carriage being returned upon the actuation of the proper key when the carriage is in this zone. In the event a word has more letters than the number of spaces provided, the operator will hyphenate such a word upon the sound of the bell.

I claim:

1. An automatic carriage return mechanism for a typewriter comprising a motor adapted to return a carriage upon the energization thereof, a power supply for said motor, a plurality of parallel circuits having common terminals for interconnecting said power supply and said motor, a pair of serially-arranged switches in each of said circuits, the actuation of any serially-arranged pair of said switches energizing said motor, a momentarily energizable two-portion latching relay for simultaneously actuating one group of said switches in all of said circuits at a predetermined position of said typewriter carriage, and a plurality of keys adapted to actuate another group of switches in said circuits, the actuation of any one of which is adapted to energize said motor when said first group of switches has been closed.

2. An automatic carriage return mechanism for a typewriter in accordance with claim 1 in which a bell is provided for indicating said predetermined position of said carriage together with means for energizing said bell.

3. An automatic carriage return mechanism for a typewriter in accordance with claim 2 in which said means is a carriage operated switch, a second switch being provided for actuation by said carriage at its starting position.

4. An automatic carriage return mechanism for a typewriter in accordance with claim 1 in which said latching relay has a latching solenoid portion and an unlatching solenoid portion, both portions of said relay being momentarily energizable, a carriage switch being provided, actuation of said switch energizing said latching portion of said relay.

5. An automatic carriage return mechanism for a typewriter in accordance with claim 4 in which a second carriage switch is provided, actuation of said second carriage switch energizing said unlatching portion of said relay.

6. An automatic carriage return mechanism for a typewriter comprising electrical means for actuating the type bars of said typewriter, a power supply for said means, a motor adapted when energized to return the carriage of said typewriter to the starting point thereof, a plurality

4

of parallel circuits between said power supply and said motor for energizing said motor, said circuits having common terminals, a momentarily energizable relay having two portions, one of said portions being adapted to be energized when said carriage reaches a predetermined point in the travel thereof, energization of said portion of said relay closing certain portions of all of said circuits between said power supply and said motor, said relay having a plurality of contacts, and a plurality of key actuated contacts in said parallel circuits for closing certain other portions of said circuits for connecting said power supply to said motor after said relay contacts have been made.

7. An automatic carriage return mechanism for a typewriter in accordance with claim 6 in which a circuit is provided between said power supply and said portion of said relay, said circuit including a switch adapted to be actuated by said carriage.

8. An automatic carriage return mechanism for a typewriter in accordance with claim 6 in which two carriage operated switches are provided, one of said switches connecting said power supply to said portion of said relay for making said relay contacts, and the other of said switches connecting said power supply to another portion of said relay for breaking said contacts of said relay.

9. An automatic carriage return mechanism for a typewriter in accordance with claim 6 in which an additional circuit is provided between said power supply and said motor, said circuit including a single switch contact adapted to be manually actuated.

10. An automatic carriage return mechanism for a typewriter in accordance with claim 6 in which audible means are provided together with a circuit between said power supply and said audible means, said circuit including a carriage operable switch for connecting said power supply to said audible means, said switch simultaneously connecting said power supply to said first-mentioned portion of said relay.

11. An automatic carriage return mechanism for a typewriter in accordance with claim 10 in which a second carriage operable switch is provided, actuation of said second switch energizing another portion of said relay for opening said certain portions of said motor energizing circuits.

References Cited in the file of this patent

UNITED STATES PATENTS

436,319	Silkman	Sept. 9, 1890
1,368,599	Bates	Feb. 15, 1921
1,509,228	Carino	Sept. 23, 1924
2,283,538	Clark	May 19, 1942
2,297,789	Mills et al.	Oct. 6, 1942