

Feb. 20, 1962

H. L. LAMBERT

3,021,936

TYPE ACTION

Filed Dec. 28, 1960

2 Sheets-Sheet 1

**Fig-1**

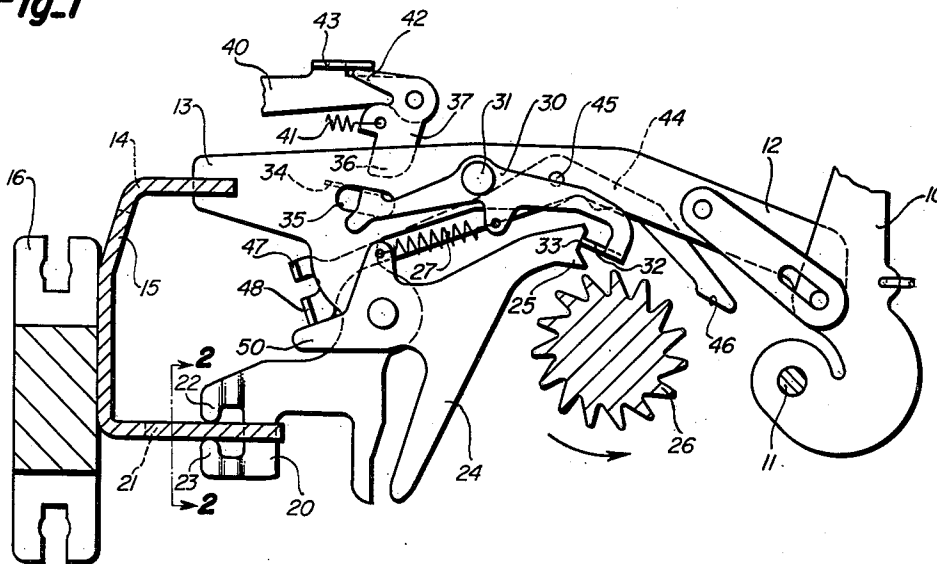
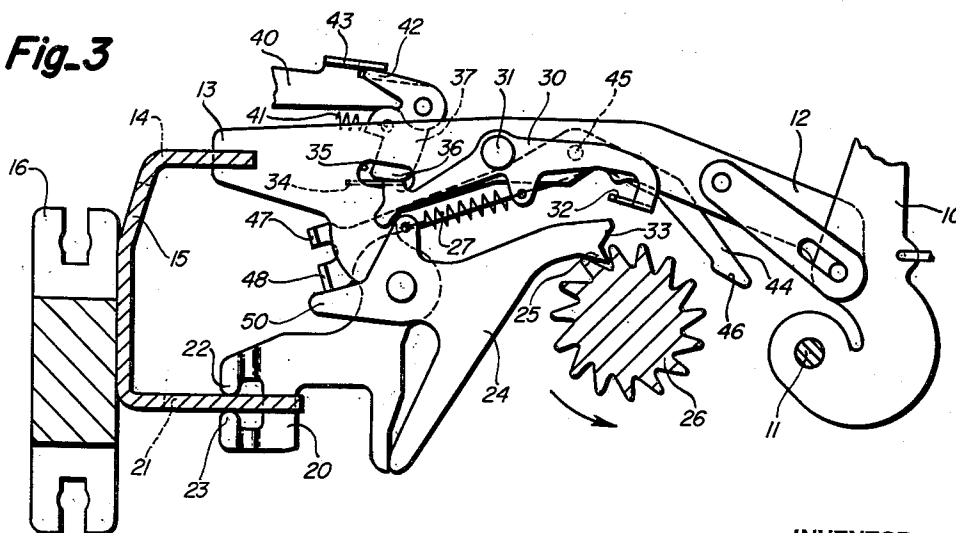


**Fig-3**



INVENTOR  
HARRY L. LAMBERT  
BY *Thomas S. Rose*  
*Albert W. Seihner*  
ATTORNEYS

Feb. 20, 1962

H. L. LAMBERT  
TYPE ACTION

3,021,936

Filed Dec. 28, 1960

2 Sheets-Sheet 2

Fig. 4

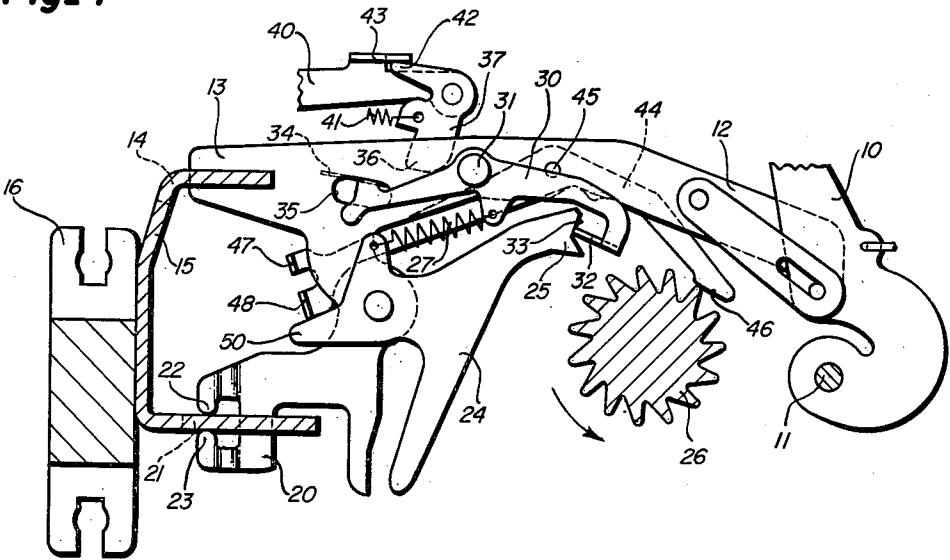


Fig. 2

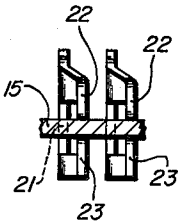
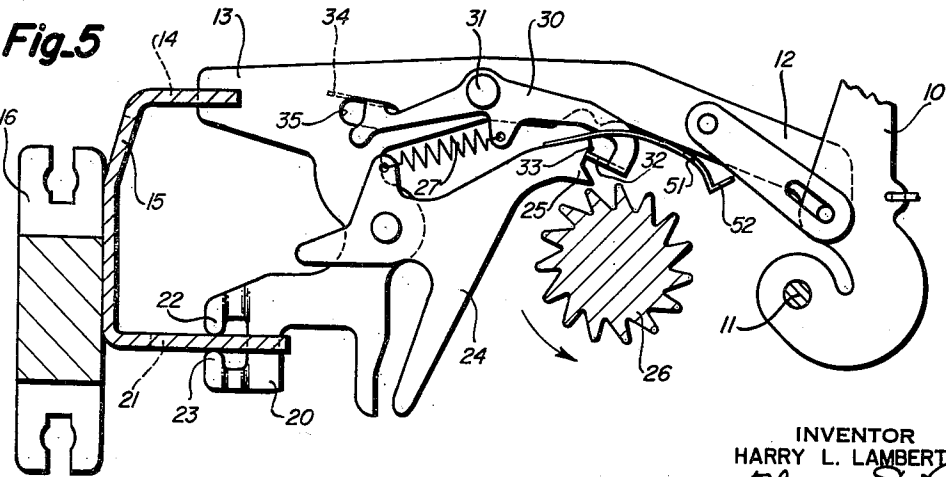


Fig. 5



INVENTOR  
HARRY L. LAMBERT  
BY *Thomas S. Ross*  
*Albert W. Scribner*  
ATTORNEYS

1

3,021,936

TYPE ACTION

Harry L. Lambert, West Hartford, Conn., assignor to  
Royal McBee Corporation, Port Chester, N. Y., a corporation of New York

Filed Dec. 28, 1960, Ser. No. 78,909

7 Claims. (Cl. 197-17)

This invention relates to a novel type action for electric typewriters and more particularly relates to an improved reset arrangement for a power roll engaging pawl or roll cam which is biased towards a power roll engaging position but which is normally held in a latched position away from a power roll engaged condition.

In type actions where a spring biased member must be reset after the initiation of an operative stroke of the action it is most common to utilize the kinetic energy of the driven parts to effect the resetting operation. Although this resetting action may be reliable it has a disadvantage in that it subtracts varying amounts of kinetic energy from the moving type bar linkage and such will affect the intensity of print produced by the successive typing operations. This condition becomes significant when it is one of only a relatively low number of variables affecting the uniformity of successive type bar speeds.

One object of the instant invention is to provide a novel type action for electric typewriters whereby little, if any, of the energy necessary to reset the power roll engaging pawl to a latched condition is derived from the kinetic energy of the driven parts of the type action.

Another object of the invention is to provide a novel type action for electric typewriters whereby at least a portion of the energy required to reset the power roll engaging pawl is supplied directly from the rotating power roll of the typewriter.

Another object of the invention is to provide a novel type action for electric typewriters whereby two power roll engaging members sequentially engage said roll during each driving stroke of said action, engagement of the first member serving to cause a driving of the type bar linkage by the power roll and the subsequent engagement of the other member serving to cause a resetting said first member to an inoperative latched condition.

Another object of the invention is to provide a novel type action whereby a power assist is provided for resetting the power roll engaging pawl to a latched condition.

A further object of the invention is to provide a novel type action for electric typewriters whereby the power roll engaging pawl is positively driven to an inoperative related condition by the direct driving action of the rotating power roll of the typewriter.

Other objects and many of the attendant advantages of this invention will be readily appreciated as the same becomes better understood by reference to the following detailed description when considered in connection with the accompanying drawings in which like reference numerals designate like parts throughout the figures thereof and wherein:

FIGURE 1 is a side elevational view in partial section and shows the normal condition of the parts of the instant type action.

FIGURE 2 is a sectional view taken along section line 2-2 of FIGURE 1.

FIGURES 3 and 4 are active views of the apparatus illustrated in FIGURE 1.

FIGURE 5 is a side elevational view in partial section and shows a modified embodiment of the instant invention.

Unless otherwise indicated it will be assumed that the various parts shown and described are suitably supported and arranged on the machine frame.

Referring to FIGURE 1 there is shown a type action

2

comprising a sub lever 10 which is pivotally mounted on a cross shaft 11. The sub lever is articulately connected to the rearward end of an action plate 12 that has an upper forward end 13 that slidably moves in a slot 14 formed in the upper part of a comb 15 secured to the typewriter frame member 16. The lower forward end 20 of the action plate slidably moves in a slot 21 formed in the lower part of said comb 15, said end 20 being formed with two cooperating and laterally bent-off fingers 22 and 23 which respectively slidably engage the upper and lower adjacent surfaces of the said lower part of comb 15 as illustrated in FIGURE 2 thereby permitting only a rectilinear horizontal sliding movement of the forward end of the action plate 12. Pivotally mounted on the action plate is a pawl 24 having a tooth 25 formed thereon which is adapted to swing into operative driving engagement with a rotatably driven power roll 26. The pawl 24 is rotationally biased towards the power roll by means of a spring 27 which is connected between said pawl and a latch 30 that is pivotally mounted on the action plate by means of a stud 31. The rearward end of the latch is formed with a bent off hook 32 which normally engages the rearward edge 33 of the pawl so as to maintain said pawl in a latched or inoperative position away from the power roll as illustrated in FIGURE 1. The forward end of the latch 30 is formed with a bent-off shelf 34 which extends through an aperture 35 formed in the action plate. Disposed immediately above shelf 34 is a lower end 36 of a by-pass or non repeat dog 37 which is pivotally mounted on a key controlled lever 40. The dog 37 is biased by a spring 41 towards a normal clockwise position determined by engagement of a dog ear 42 with the adjacent bent over shoulder 43 formed on the key controlled lever 40.

A reset lever 44 is pivotally mounted on action plate 12 by means of a stud 45. The rearward end of the reset lever is formed with an inclined camming edge 46 while the forward end thereof is formed with bent-off ears 47 and 48 the lower edge of ear 48 normally overlying the upper edge of a forward extending portion 50 of the said pawl 24.

In operation when the type bar associated with the sub lever 10 is to be actuated, the related key controlled lever 40 is operated so that the by-pass or non-repeat dog 37 swings downwardly thereby engaging the shelf 34 of latch 30 and pivoting the latter in a counter clockwise direction against the action of spring 27. When the hooked end 32 of the latch moves out of restraining relation with respect to the rearward pawl edge 33 the pawl 24 will swing in a clockwise direction into operative driving engagement with the teeth of the rotating power roll 26 as illustrated in FIGURE 3. In its engaged FIGURE 3 position the pawl 24 through its projection 50 will maintain the reset lever 44 in a clockwise position. After engagement of the pawl and power roll the action plate 12 will be driven to the left in a tangential path with respect to the power roll as shown in FIGURE 4 so as to drive the associated type bar towards the typewriter platen. During the latter part of the said leftward movement of the action plate 12 the pawl will move out of engagement with the power roll and the inclined cam edge 46 of the reset lever will thereafter engage the outer tips of the counter clockwise moving power roll teeth as illustrated in FIGURE 4 so that the reset lever 44 is then cammed in a counter clockwise direction in response to the continued leftward movement of the action plate. This counter clockwise movement of the reset lever will, through the bent off ear 48, serve to swing the pawl 24 in a counter clockwise direction back into latched relation with the hooked end 32 of the latch 30 as illustrated in FIGURE 4. After the power driven printing stroke has been completed the type bar actuating linkage is

restored to its normal FIGURE 1 position by means of the usual return spring means. The operative counter clockwise movement of the reset lever is power assisted by the frictional contact between the tips of the counter clockwise moving power roll teeth and the reset lever camming edge 46. Thus the energy required to swing the pawl back to the FIGURE 1 latched condition is supplied by a combination of the linear inertial effects of the leftwardly moving action plate 12 and the frictional effects between the camming edge 46 and the moving power roll teeth. In this manner a power assist directly from the power roll is provided for the resetting of the pawl 24 and such substantially decreases the amount of kinetic energy which must be subtracted from the driven type bar actuating linkage for pawl resetting purposes. As a result the fluctuation in the intensity of print of the instant type action is decreased thereby improving the uniformity of shade and appearance of the typed characters.

FIGURE 5 shows another embodiment of the instant invention; here the parts are constructed and operated in a manner similar to that described in connection with FIGURE 1 except that instead of providing a pivotally mounted reset lever, such as 44 of FIGURE 1, a reset arm 51 is fastened to the pawl 24, said arm being slightly flexible and having a tooth-like portion 52 formed at the rearward free end thereof. During the power driven stroke of the action plate about the same time that the pawl becomes disengaged from the power roll the tooth-like portion 52 will be engaged by one of the power roll teeth and the latter will thereafter positively lift the slightly yielding arm 51 so that the pawl is again reset or moved to its latched position shown in FIGURE 5. In this reset action substantially all of the energy required for resetting the pawl 24 is derived directly from the power roll and hence there is little if any depletion of the kinetic energy of the driven type bar actuating linkage for pawl relatching purposes. This condition will further improve the freedom and predictability of movement of the associated type bar and such in turn will improve the printing characteristics of the type action.

In addition to the above noted advantages gained by power resetting the pawl latch 30 in the manner described, the further benefit of greatly improved reliability has been found to flow from restricting the forward end of the action plate 12 to the rectilinear path of movement described.

While several embodiments of the invention have been shown and described, it will be apparent to those skilled in the art that numerous variations and modifications may be made in the particular construction without departing from the underlying principles of the invention. It is therefore desired, by the following claims to include within the scope of the invention all such variations and modifications whereby substantially the results of the invention may be obtained by the use of substantially the same or equivalent means.

The invention claimed is:

1. In a type action having a rotating power roll, a type bar actuating linkage, a power roll engaging member movably mounted on said linkage and adapted to operatively engage said power roll so as to drive said type bar actuating linkage, means for biasing said member towards engagement with said power roll, and latch means for retaining said member in an inoperative position away from said power roll; the improvement comprising a reset element supported on said type bar actuating linkage and having a power roll engaging portion formed thereon, said reset element when engaged with said power roll urging said member towards its inoperative latched position away from said power roll.

2. Apparatus as defined by claim 1 wherein said reset element is movably mounted on said linkage and has one portion engageable with said member and another portion which is formed with an inclined camming edge that is

frictionally engageable with the rotating periphery of said power roll whereby the frictional action between the power roll periphery and said camming edge tends to urge said reset element in a direction which will displace said member towards said inoperative latched position.

3. Apparatus as defined by claim 1 wherein said reset element is mounted on said member and has a tooth-like portion which is engageable with said power roll so as to substantially positively displace said member to its inoperative position away from said power roll.

4. In a type action having a rotating power roll, a type bar actuating linkage, a power roll engaging member movably mounted on said linkage and adapted to operatively engage said power roll so as to drive said type bar actuating linkage, means for biasing said member towards engagement with said power roll, and latch means for retaining said member in an inoperative position away from said power roll; the improvement comprising a reset element mounted on said linkage for movement between operative and inoperative positions, and means on said reset element engaging said member so that when member is held in its inoperative position the reset element is also held in its inoperative position and when said member is unlatched and swings into engagement with said power roll said reset element will thereby be moved to its operative position, said reset element having a camming edge formed thereon which when said reset element has been moved to its operative position and subsequently displaced during the power roll driven stroke of said linkage is adapted by reason of the motion of said power stroke to move into camming relation with respect to the power roll so as to tend to displace said reset element and said member towards their respective normal latched inoperative positions, the frictional contact existing between the said camming edge and the periphery of the rotating power roll during the period that said edge and power roll are in camming relation due to the drive motion of said type bar actuating linkage serving to directly assist the displacing of said reset element and said member towards their said respective normal positions.

5. In a type action having a rotating power roll, a type bar actuating linkage, a power roll engaging member movably mounted on said linkage and adapted to operatively engage said power roll so as to drive said type bar actuating linkage, means for biasing said member towards engagement with said power roll, and latch means for retaining said member in an inoperative position away from said power roll; the improvement comprising a reset element secured to said member, said element being formed with a power roll engaging toothed portion whereby when said member has engaged and has been power driven by said power roll said toothed portion will engage said power roll so as to power drive said member to its relatched inoperative position.

6. In a type action a type bar actuating linkage including an action plate, means mounting one end of said action plate for rectilinear sliding movement, a power roll, a pawl pivotally mounted on said action plate and having a roll engaging portion formed thereon, means for biasing said pawl towards an operative position in engagement with said power roll, latch means for normally retaining said pawl in an inoperative position away from said power roll, and means for resetting said pawl to its inoperative position after each power driven roll engaged stroke thereof, said means for mounting one end of said action plate being arranged to support said pawl for rectilinear movement in a path that is substantially tangential with respect to said power roll while said means for resetting said pawl comprises a reset lever pivotally mounted on said action plate and having a roll engaging camming surface and a pawl engaging projection formed thereon, said camming surface being adapted to engage said power roll during a power stroke and after disengagement of said pawl from said power roll whereby said pawl is reset to

5

an inoperative latched position away from said power roll.

7. In a type action a type bar actuating linkage including an action plate, means mounting one end of said action plate for rectilinear sliding movement, a power roll, a pawl pivotally mounted on said action plate and having a roll engaging portion formed thereon, means for biasing said pawl in an inoperative position away from said power with said power roll, latch means for normally retaining said pawl in an inoperative position away from said power roll, and means for resetting said pawl to its inoperative position after each power driven roll engaged stroke thereof, said means for mounting one end of said action

6

plate being arranged to support said pawl for rectilinear movement in a path that is substantially tangential with respect to said power roll, said means for resetting said pawl comprising an extension formed on said pawl and having a toothed portion formed thereon which is adapted to engage said power roll so as to substantially positively drive said pawl to its inoperative latched position.

#### References Cited in the file of this patent

#### UNITED STATES PATENTS

|           |        |               |
|-----------|--------|---------------|
| 2,896,765 | Enders | July 28, 1959 |
| 2,931,481 | Salto  | Apr. 5, 1960  |