Dec. 15, 1936. M. GARBELL 2,064,203

RECORDING MACHINE

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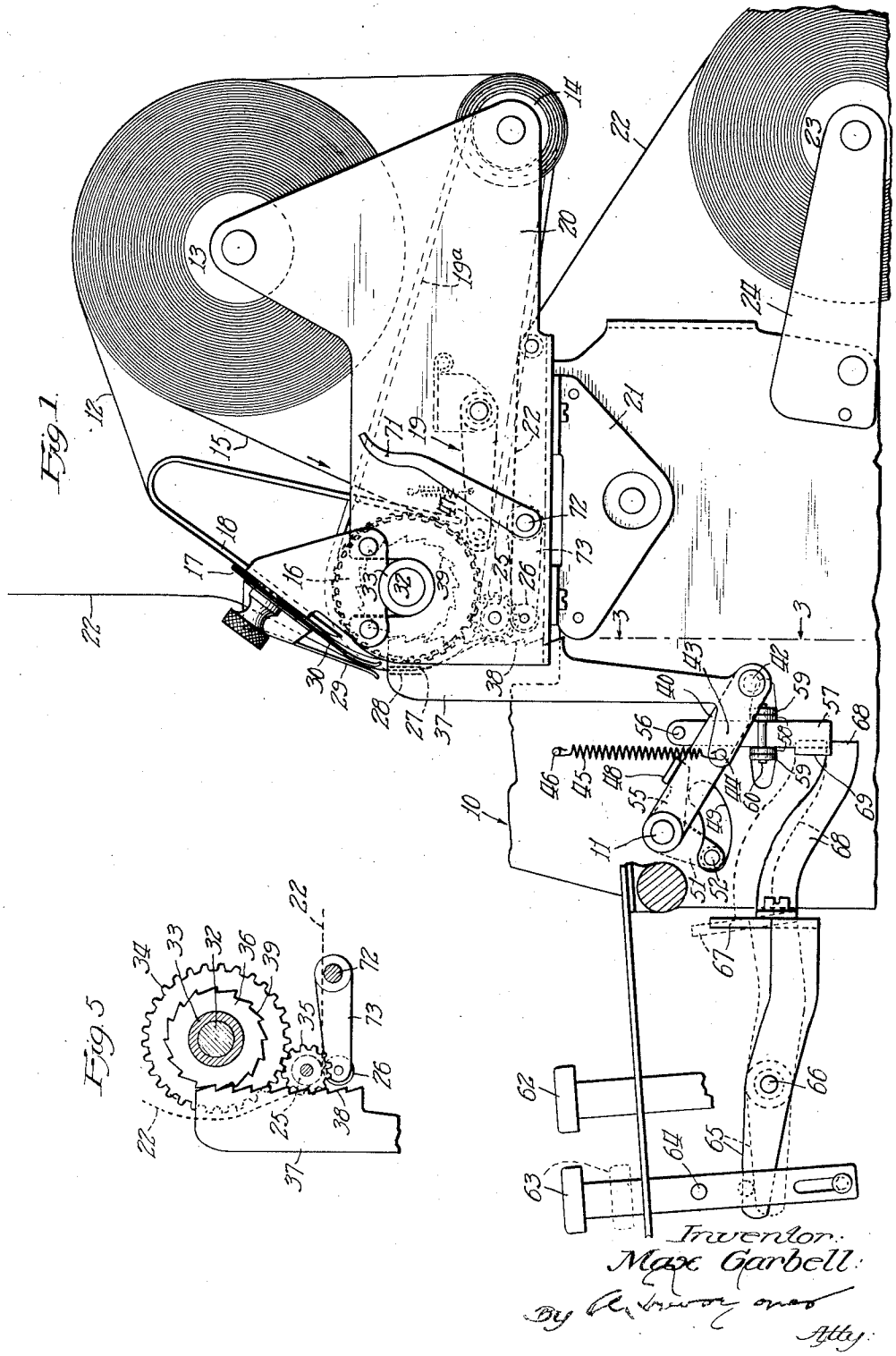


Fig. 1.

Fig. 5

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Fig. 2.

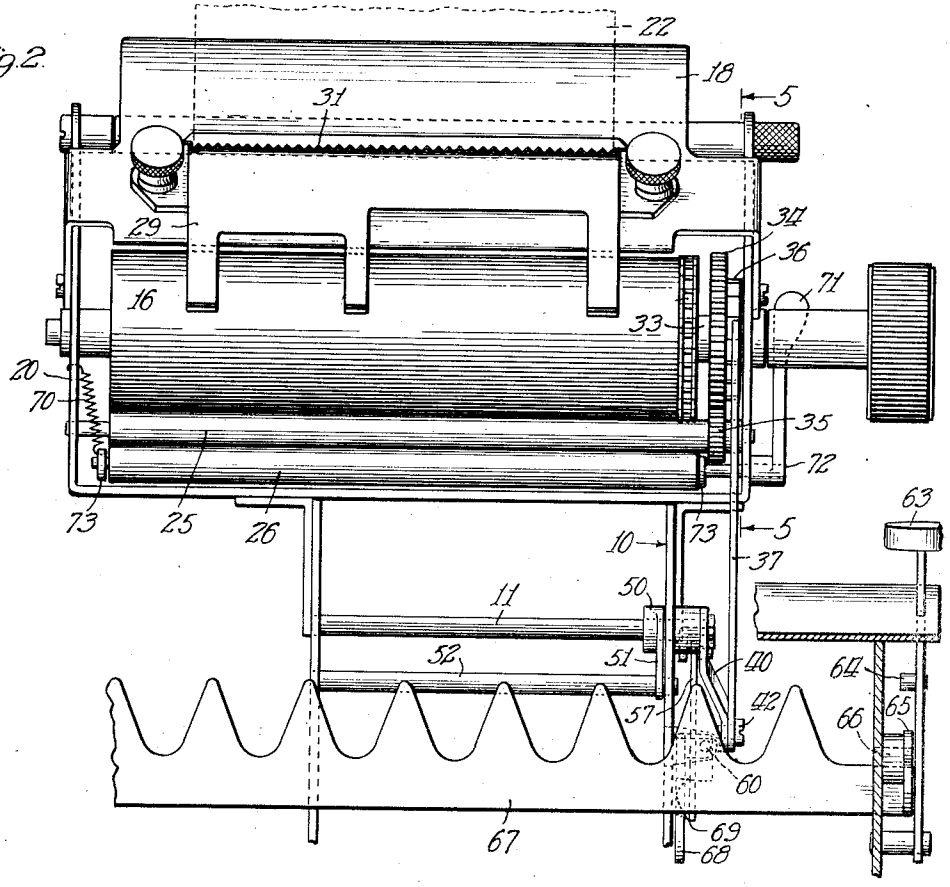


Fig. 3.

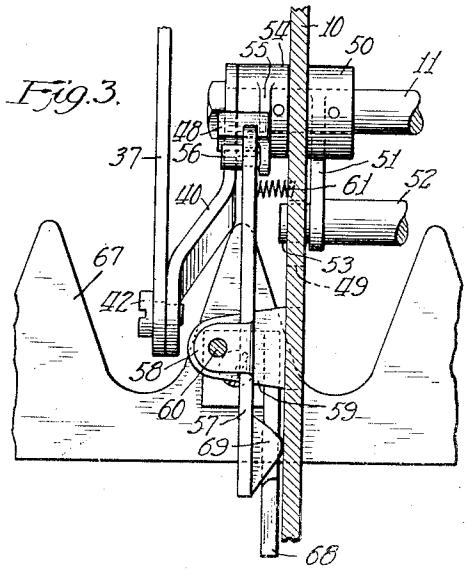
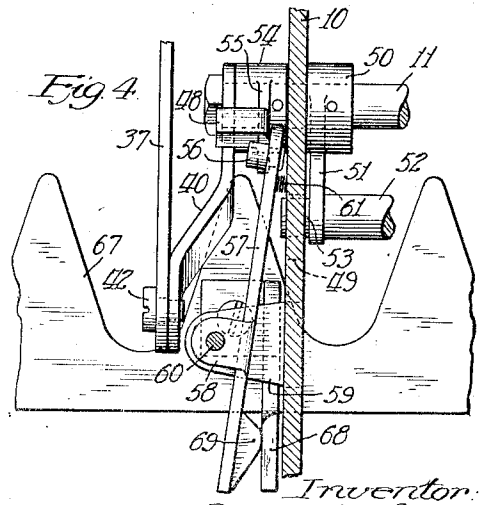


Fig. 4.



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2,064,203

UNITED STATES PATENT OFFICE

2,064,203

RECORDING MACHINE

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Application March 4, 1935, Serial No. 9,145

5 Claims. (Cl. 197—128)

This invention relates to recording machines more particularly of the adding or calculating type.

More specifically, the invention relates to improved driving means for an auxiliary web of paper coacting in conjunction with the usual web of paper upon which an entry or calculation is recorded.

Among other objects, the invention contemplates an improved drive of this type in which the auxiliary web of paper is fed simultaneously with the usual web of paper and are moved into position to be simultaneously printed upon by the usual printing mechanism with which such machines are provided, while the auxiliary web of paper may be selectively moved at varying distances of travel independently of the other. Thus for example, the usual web of paper may be employed as a permanent record of successive recorded transactions, with maximum utilization of the writing space on this web, while the auxiliary web of paper may be employed to provide slips of paper of a suitable size for handling, such as to be given to the customer, and containing a record of one transaction or a group of transactions.

A further object is the provision of mechanism coacting with the driving mechanism of the machine and under the control of manually manipulative means for rendering said driving means operable for a greater distance of movement to in turn move said auxiliary web of paper a greater distance than that to which it is moved under the normal operations of the machine.

Other objects and advantages will be apparent from the following description, taken together with the accompanying drawings in which—

Figure 1 is a side elevational view of a portion of an adding or calculating machine with which my invention may be associated;

Figure 2 is a fragmentary front elevational view of the structure of Fig. 1;

Figure 3 is an enlarged fragmentary elevational view of details of construction, being a section taken on the line 3—3 of Fig. 1, looking in the opposite direction from the view shown in Fig. 2;

Figure 4 is a view similar to Fig. 3 but showing the parts in changed position; and

Figure 5 is a partial section taken on the line 5—5 of Fig. 2.

In the illustrative construction shown in the drawings, the main frame of an adding or calculating machine is represented by the numeral 10, a part only of this frame being shown for present purposes and it being understood that the mechanism of the machine generally is carried by this frame. Rotatably mounted on the frame 10 is shown a main axle 11 which, as will be readily understood by those skilled in the art, is partially rotated in one direction by the manipulation of the usual actuator handle (not shown) which is pulled upon by the clerk or operator causing a given transaction to be recorded or electrically controlled. It will also be understood that the usual springs (also not shown) may restore both the actuator handle and the main axle 11 to its initial position by partially rotating it in the opposite direction after the handle is released by the operator.

By appropriate connections, not here necessary to be shown, upon this reverse rotation of the main axle 11 just referred to, the usual paper web 12 is drawn to the extent of one step, or, a writing line, from the supply roll 13 and wound upon the record roll 14, the web being drawn initially from the supply roll 13 as at 15 and passing around the platen 16 in the direction of the arrow, the web 12 after leaving the platen passing between the guide plates 17, 18. These connections alluded to for driving the usual web 12 in this step-by-step movement may include the usual drive mechanism (not shown) together with a tension mechanism indicated generally by the numeral 19 and also a chain-and-sprocket drive 19a coupling the movement of the platen with the record roll 14. These members pertaining to the usual paper web 12 and its driving mechanism are suitably carried by the sub-frame 20 mounted along the top rear end of the main frame 10 as by a bracket 21.

In accordance with my invention, the platen 16 and paper tension mechanism 19 are aligned substantially horizontally and are spaced sufficiently above the main frame 10 to permit of the passage thereunder of an auxiliary web of paper 22 which is drawn from the supply roll 23 carried by a bracket 24 suitably attached to the main frame. The auxiliary web 22, on its way to the platen 16, passes first between a pair of friction drive rollers 25, 26 and then about the platen 16 in the same direction as the usual web 12, the usual ribbon 27 being provided for the web 12 and another ribbon 28 for the auxiliary web 22, the web 12 passing between the platen and the first ribbon 27 and the auxiliary web 22 passing between the first ribbon 27 and

the second ribbon 28. It will be understood that the same type strikes through both ribbons to print upon both webs simultaneously. Thereupon the auxiliary web 22 passes between the pair of guide-plates 29, 30 which together, at the place where the auxiliary web 22 departs therefrom, may form the usual saw-tooth jaw 31 for tearing off suitable lengths of the auxiliary web 22.

I will now describe my provisions for driving or feeding the auxiliary paper web 22 independently of the usual web 12 and at varying distances of travel, in accordance with my invention.

For this purpose, in the present exemplification, the platen axle 32 has freely fitted thereon for a smooth-running fit, a bushing 33 held in fixed axial position between the platen and the sub-frame 20 but free to turn on the platen axle 32. The bushing 33 carries a gear wheel 34 which meshes with a pinion 35 fixed to cause rotation of the friction drive roller 25 which is parallel to and in spaced relation with the platen 16. On its outer face, the gear 34 has secured thereto a ratchet 36 cooperating with a pawl 37, the pawl and ratchet having the usual teeth 38, 39 respectively formed so that the teeth 38 will slip over the teeth 39 when the pawl moves upwardly but will cause rotation of the ratchet 36 when the pawl moves downwardly, and thus also cause rotation of the gear 34 and pinion 35 to move the auxiliary web 22 past the platen a distance depending upon the length of the stroke of the pawl 37. It will be seen that the pawl is desirably somewhat in the form of a rack having a plurality of teeth 38.

The pawl 37 is shown carried by a link 40, this link being freely pivoted on the main axle 11 at one end, and the pawl 37 being freely pivoted to the free end of the link as at 42. The pawl has an extension 43 forming with the pawl itself somewhat in the nature of a bell-crank lever to which is secured as at 44 one end of a helical extension spring 45, the spring being anchored at its other end as at 46 to the main frame 10. The spring 45 being under tension, maintains the pawl 37 with its teeth in engagement with the teeth of the ratchet 36 and also, when the link 40 is permitted to move, the spring 45 causes movement of the pawl upwardly in engagement with the ratchet.

It will thus be apparent that if it is desired to move the auxiliary paper web 22 not only concurrently but for the same distance of travel in a common step-by-step movement with the usual web of paper 12, it is only necessary to limit the distance of travel of the pawl 37 in its upward direction, so that upon its movement downwardly to restore it to initial position, it will rotate the drive roller 25 for the auxiliary web 22 a distance equal to the rotation of the platen by the drive mechanism for the usual web 12 (not shown).

Accordingly, I provide that when the main axle 11 is rotated in a counter-clockwise direction, as viewed in Fig. 1, a stop 48 fixed to rotate with the main axle 11, in the path of the link 40, is moved upwardly from this link a distance equal to the length of the slot 49 in the frame 10. That is, upon the inside of the frame 10 there is keyed to the axle 11 a collar 50 having an arm 51 carrying a restoring bar 52 which serves to restore the type bar hammers (not shown), and the restoring bar 52 has a projection 53 which moves in the slot 49 indicating the limit of rotation of the main axle 11 and movement of the restoring bar. Then, upon the outer face of the frame 10, in accordance with my invention, I key another collar 54 which carries the arm 55 rigid with the axle 11 and the outer end of which arm is turned at right angles to provide the stop 48 already referred to. Thus when the main axle is rotated in counter-clockwise direction the link 40 supporting the pawl 37 tends to follow the stop 48 and thus tends to move upwardly.

To limit movement of the link 40 to a less distance than that which would otherwise be permitted by the full movement of the stop 48, I provide a yieldable or releasable detent 56 also, like the stop 48, normally disposed above the link 40 in the path of its movement. The detent 56 in this instance is shown as a pin secured transversely to the upper end of a vibrating member 57 having a pair of ears 58 intermediate of its length which are received between a pair of ears 59 struck out from the frame 10 and through all of which ears is passed a pivot pin 60. A helical compression spring 61 disposed between the upper end of the vibrating member 57 and the frame 10 normally maintains the vibrating member parallel with the face of the frame so that the pin or detent 56 is in the path of the link 40 and limits the movement of the link 40 and consequently of the pawl 37, to a distance appropriate to effect the same distance of travel for the auxiliary web 22 as the usual web 12 has been moved, that is a distance which would be equivalent to the normal spacing for a single line of writing on both of the webs.

The operation just described is the normal occurrence, that is when one or more of the keys such as the one indicated at 62 are depressed and the actuator handle pulled and released or other actuating means operated. As already pointed out, actual movement of the webs occurs at the time of the return or downward stroke of the pawl 37, which restores the pawl to its initial position as shown in Fig. 1. This restoration of the pawl to its initial position is effected by the stop 48 which, when the main axle 11 rotates in a clockwise direction as viewed in Fig. 1, engages the upper edge of the link 40 and pulls this link downwardly away from the detent 56, movement of the stop 48 in this direction being also limited by the movement of the restoring bar 52 and also indicated by the slot 49.

It is desirable that a different action occur with respect to the auxiliary paper web 22 under varying conditions, for example as after the operator has pressed a control such as the totalizer key 63. After that has occurred, it is desirable that upon return movement of the actuator handle or other actuating means for the axle 11, and rotation of the main axle 11 of the machine in clockwise direction, the auxiliary web 22 should move more than a single writing space or line and should move sufficiently to provide an extended space between say a total just recorded and the next entry which will occur on the auxiliary web 22, this extended space providing a suitable size of paper to be torn off of the auxiliary web 22 as by the saw-tooth jaw 31 for delivery to a customer as a receipt, check or the like.

To accomplish this, as best shown in Fig. 4, I provide that the totalizer key 63 automatically effects a greater distance of movement of the

auxiliary web 22. That is, as here shown, the depression of the totalizer key 63 causes a pin 64 thereon to contact the upper edge of a bar medially pivoted as at 66 on the frame and to change the position of this bar from that shown in full lines in Fig. 1 to that shown in dotted lines. The bar 65 is rigidly secured, at its end opposite its end contacting with the pin 64, to a clearing bar 67 running transversely of the machine and having in addition to its present functions, other functions not necessary to be here described. Movement of the bar 65 as just described also moves the clearing bar 67 from the full to the dotted-line position and the clearing bar 67 has rigidly secured thereto a finger 68, which, upon movement from full to dotted-line positions in Fig. 1, inserts itself between the frame 10 and a cam 69 on the lower end of the vibrating bar 57, thereby moving outwardly the lower end of this vibrating bar and moving inwardly the upper end of the bar so that the detent 56 is moved out of the path of the link 40 against the force of the compression spring 61. Thereupon on counter-clockwise rotation of the main axle 11, the link 40, under the pull of the spring 45, is now permitted to rotate farther on its axis and past the pin 56, in contact with the stop 48, to the full limit of movement of the latter, the movement of which in turn is limited as already described. This permits a longer upward stroke of the pawl 37 and consequently a succeeding longer downward stroke is required to restore the pawl to initial position, which again occurs as already described by the clockwise rotation of the main axle 11 and the pull of the stop 48 on the link 40. This downward movement of the pawl 37 occurs at the beginning of the return movement of the axle 11, as will be readily understood by those skilled in the art, so that the link 40 moves downwardly past the detent 56 before the latter has been returned to the path of the link by withdrawal of the finger 68 from engagement with the cam 69, which occurs at the end of the return stroke of the shaft.

As shown, the link 40 may have its outer end offset away from the frame 10 to prevent interference thereof with the free functioning of the vibrating bar 57.

The friction rollers 25, 26 may be held in engagement by a helical tension spring 70 secured to the frame at one end and at its other end secured to one of the arms 73 carrying the lower roller 26. The upper roller 25 is fixed journaled in the frame 20, while the arms 73 carrying the roller 26 are pivoted at 72 in the frame 20, rigid with which arms is a finger-piece 71 for releasing the roller 26. By pulling forwardly upon the finger-piece 71 the rollers 25, 26 may be separated and the web 22 may be manually pulled therethrough any distance desired, or may be adjusted to straighten it.

So constructed and arranged, my invention permits the use of a plurality, in this instance two separate recording webs of paper, one of which, the usual web 12, provides a permanent record of each transaction, the record of one transaction following on the next line below the total of the previous transaction, thus saving writing space on the usual web 12, while the auxiliary web 22 is also simultaneously printed upon and with the same type at the same place, the webs being in superposed relation. In the case of the auxiliary web 22, however, the distance of movement of this web is independently and selectively varried to suit the recording, as in the example given, first of the items of a transaction and then of the total of the given transaction. Thus the auxiliary web 22 is fed part of the time in step-by-step concurrence with the usual web 12 and an equal distance of travel, while at other times, such as after depression of the totalizer key 63, the web 22 instead of moving a single writing space, as does the usual web 12, will move say 10 writing spaces, thus providing a surplus of paper in the auxiliary web 22 which can be cut off to provide a slip of suitable size to hand to the customer, while desirably conserving paper on the usual web 12.

Obviously, the invention is not limited to details of construction, shown for purposes of exemplification, and may be readily adaptable to cash registers, typewriters or the like, as well as to adding and calculating machines. Furthermore, it is not indispensable that all features of the invention be conjointly used, as various combinations and sub-combinations may be advantageously employed.

Having described my invention, I claim:

1. In a device of the class described, the combination with a paper web, of a pawl and ratchet mechanism for driving the web, a main axle, a link pivoted at one end to the main axle and pivoted to the pawl at the other end, a spring connected with the pawl and tending to move the pawl and rotate the link, a rockable member normally limiting movement of the link to limit movement of the pawl, a control key, a member actuated by movement of the control key to move the rockable member from the path of the link to permit the spring to move the pawl beyond the rockable member, an engageable member keyed to rotate with the main axle, said engageable member being also in the path of the link and in one rotatable position of the axle limiting movement of the link when the link is past the rockable member, said engageable member thereafter restoring the link and pawl to initial position after reverse rotation of the axle.

2. In a machine of the class described, the combination with a paper web, drive means comprising feed rolls and pawl and ratchet means operatively connecting said feed rolls for movement in one direction, a main axle, a link pivotally carried for swinging movements on the main axle and pivoted to the pawl, an engageable member keyed to rotate with the main axle, spring means normally urging said link against the engageable member, a rockable member normally in the path of movement of said link determining the distance of movement of said link and pawl under the tension of the spring means, and manually manipulative means rendering said rockable member ineffective with said link permitting it and the pawl to move the extent of movement of said engageable member under the control of its spring means.

3. The combination of claim 2 hereof in which the manually manipulative means effects a movement of said rockable member out of the path of said link permitting the same to be spring-urged against said engageable member for the entire distance of movement of the main axle.

4. In a machine of the class described, the combination with a paper web, of pawl and ratchet means for driving the web, a main axle, a link pivoted on the main axle and having its

free end pivoted to the pawl, a spring urging the link and pawl in one direction, a rockable member limiting movement of the link to limit movement of the pawl, manipulative means, operatively connected with the rockable member to effect movement of said rockable member and permit the spring to move the link and pawl past the rockable member, an engageable member extending into the path of the link and arranged to rotate with the main axle and in one rotatable position thereof limiting movement of the link when said link is past the rockable member.

5. In a machine of the class described, the combination with a paper web, of a pawl and ratchet mechanism for driving the web, a main axle, a link pivotally carried for swinging movements on the main axle and pivoted to the pawl, a spring connected with the pawl urging the same and link upwardly, an engageable member keyed to rotate with the main axle and normally withholding movement of the link and pawl, a rockable member normally in the path of said link controlling the normal movement of the link and pawl under the control of said engageable member, manipulative means operatively connected with the rockable member, the engageable member forming means for limiting movement of said link and pawl in one rotatable position of the axle and when the link is past the rockable member, said engageable member thereafter restoring the link and pawl to initial position after reverse operation of the axle.

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