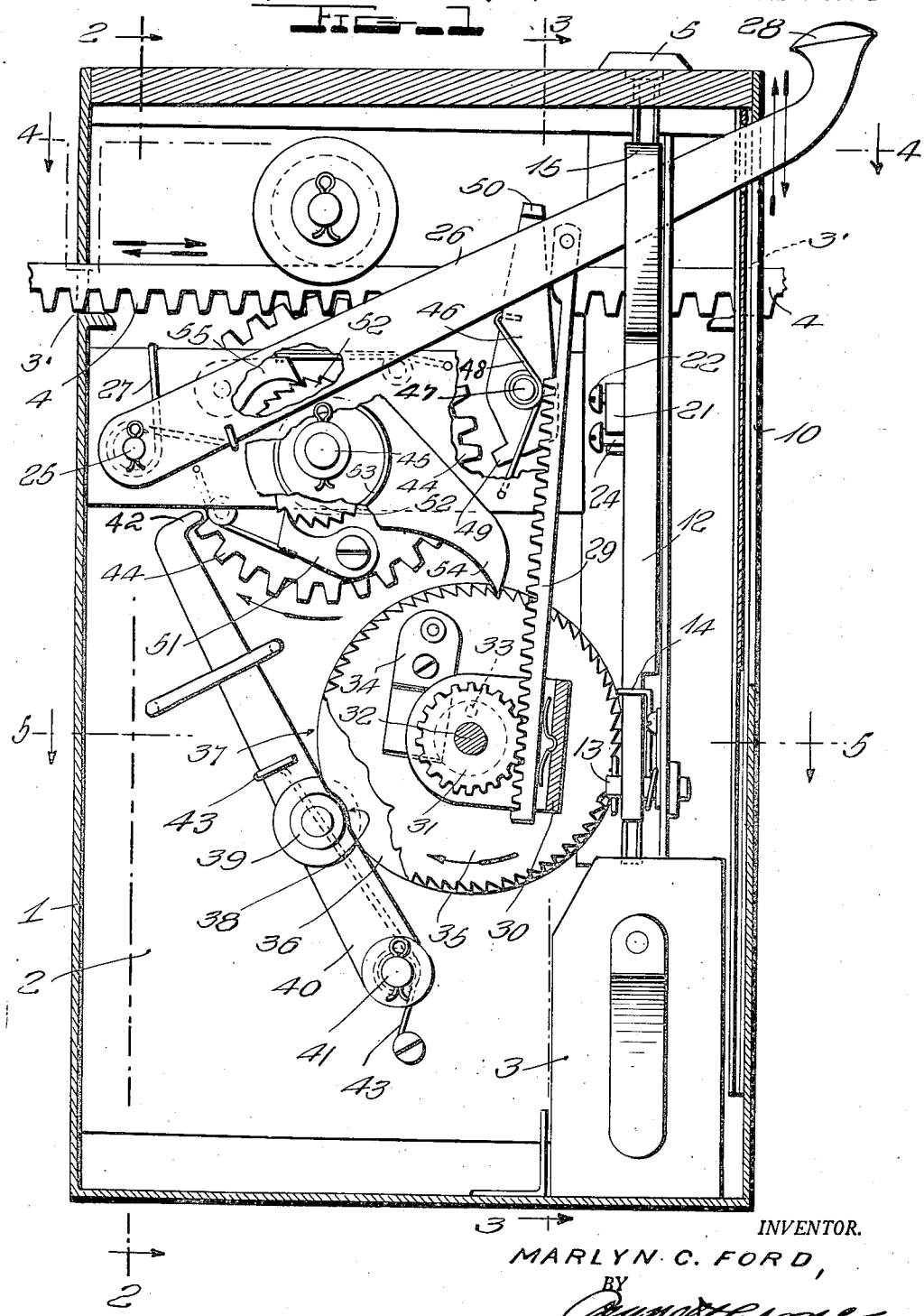
May 1, 1945. M. C. FORD 2,374,927

COIN CONTROLLED LOCKING DEVICES FOR TYPEWRITERS

Filed July 30, 1943 3 Sheets-Sheet 1



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COIN CONTROLLED LOCKING DEVICES FOR TYPEWRITERS

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FIG. 2

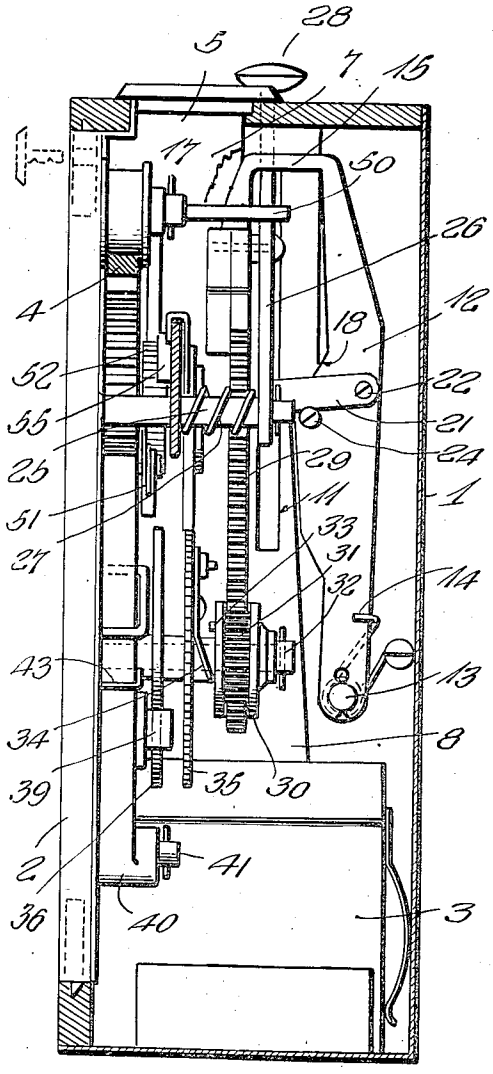
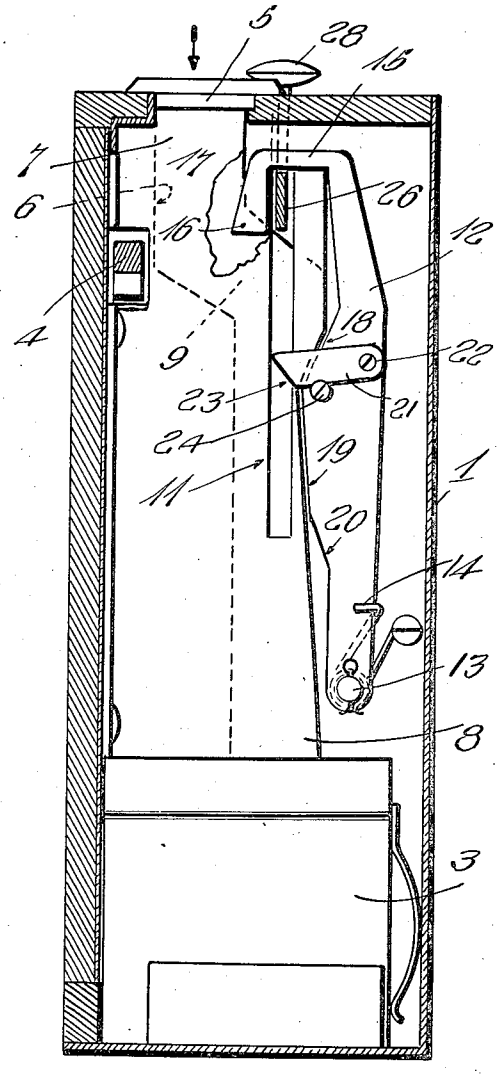


FIG. 3



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COIN CONTROLLED LOCKING DEVICES FOR TYPEWRITERS

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FIG. 4

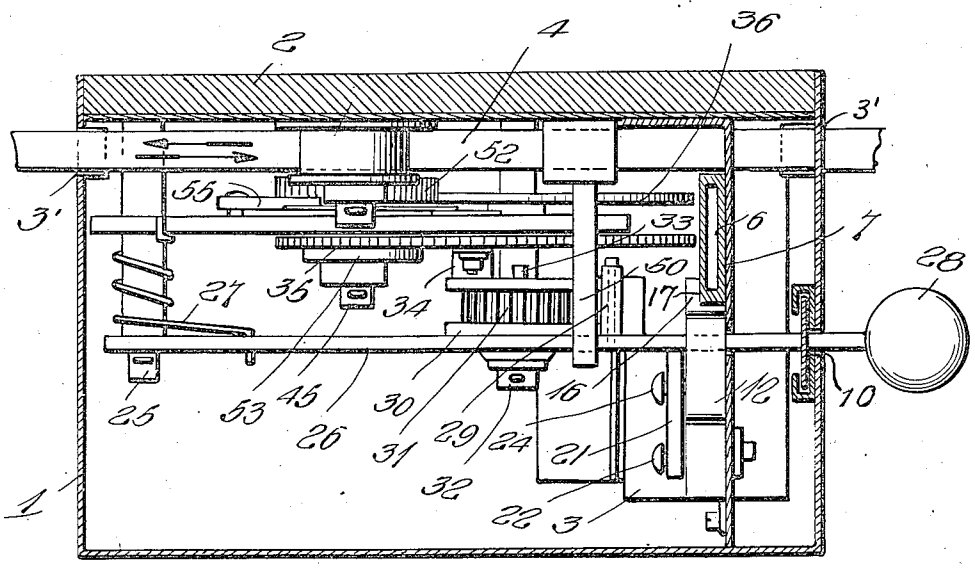
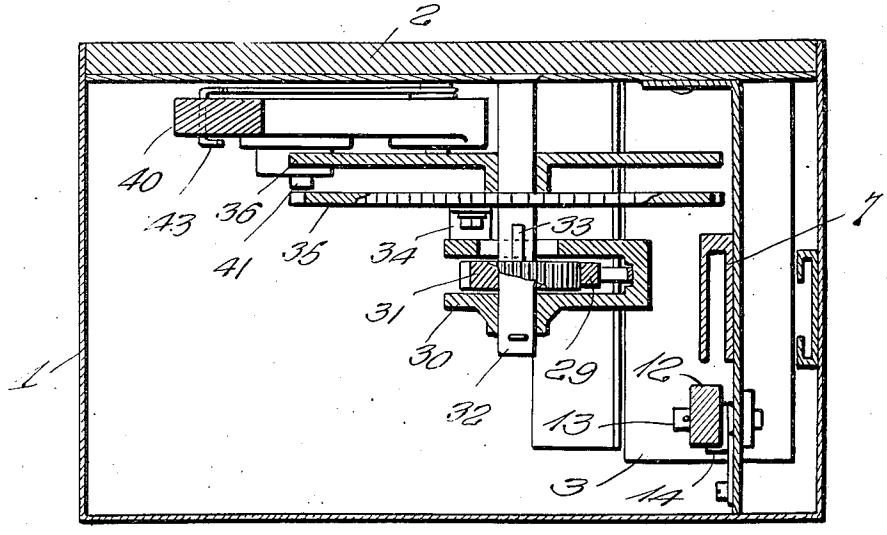


FIG. 5



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Patented May 1, 1945 2,374,927

UNITED STATES PATENT OFFICE

2,374,927

COIN CONTROLLED LOCKING DEVICE FOR TYPEWRITERS

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Application July 30, 1943, Serial No. 496,795

16 Claims. (Cl. 197—193)

This invention relates to a locking mechanism for typewriters, and particularly to a locking mechanism of coin-controlled type designed to normally lock the machine from operation and to be released by prepayment of a prescribed coin to permit the machine to be operated for the writing of a predetermined number of lines or amount of typewritten matter.

One object of the invention is to provide a mechanism of this character which is simple of construction, reliable and efficient in operation and adapted for attachment to and use in connection with any make of typewriting machine.

A further object of the invention is to provide a mechanism of this character which may be designed to operate with a coin of any desired denomination, and which is of a construction not liable to easily get out of order.

A still further object of the invention is to provide a mechanism of this character which embodies a simple and efficient construction of meter for governing its operation to allow the typewriting machine to be operated for the typewriting of a certain number of lines or amount of matter upon payment of the prescribed coin.

The invention consists of the novel construction, combination and arrangement of parts hereinafter fully described and claimed, and as shown in the accompanying drawings, in which:

Fig. 1 is a vertical longitudinal section through the locking mechanism showing the parts in normally locked position.

Fig. 2 is a vertical transverse or front-to-rear section thereof taken substantially on line 2—2 of Fig. 1.

Fig. 3 is a section similar to Fig. 2 taken substantially on line 3—3 of Fig. 1.

Fig. 4 is a sectional plan view taken substantially on line 4—4 of Fig. 1.

Fig. 5 is a sectional plan view on line 5—5 of Fig. 1.

The locking mechanism comprises a casing 1 of suitable form and having a removable or hinged door or wall 2, adapted to be held closed by any suitable locking means and which when removed or opened will allow access to the interior of the casing for removal of deposited coins and inspection of and cleaning or repairs, as well as replacement, of parts of the locking mechanism contained therein. This casing, in practice, is suitably fastened to the frame of the typewriter at the rear thereof or to the typewriter desk or stand. A coin receiving chamber 3 is arranged in the bottom of this casing and slots 3¹ are formed in opposed walls at the top of the casing for passage of a rack bar 4. This rack bar in practice is suitably fixed at its ends to the frame of the typewriter carriage so as to travel with the carriage in its forward and backward movements.

Provided at the top of the casing is a coin insertion slot 5 with which communicates the inlet end 6 of a coin chute 7, having a delivery end 8 lying at one side of and out of vertical alinement with the end 6 and connected therewith through a lateral passage 9. Formed in one of the side walls of the casing is a guide slot 10 lying in alinement with similar slots 11 formed in the walls of the chute 7. The upper portions of all of these slots lie on a line at one side of the chute 6, while the lower portions of the slots lie in line with the chute end 8 with which the slots 11 communicate.

Located in the casing at one side of the chute 7 is a releasing lever 12 pivoted at its lower end, as at 13, to swing toward and from the chute. This lever is held in its normal position by a spring 14 and has an upper end portion 15 lying above the level of the slots along one side 17 of the portion 6 of the chute, said end 15 terminating in a depending arm 16. The lever 12 is also formed with a coin stop surface 18, a coin guide surface 19 and a coin releasing surface 20. A detent 21 is pivoted at one end, as at 22, to the lever 12 and has its free end projecting into the chute portion 8 at one side of and at a point between the surfaces 18 and 19 and provided with a beveled or inclined underface 23. A stop 24 on the lever 12 supports and prevents down tilting movement of the detent 21, while permitting it to tilt upward.

Pivotally mounted at one end within the casing, as at 25, is an operating lever 26 normally held in an upwardly inclined position by a spring 27. The opposite end of this lever projects outwardly through the slots 11 in the chute and slot 10 in the casing and is movable downwardly and upwardly therein. For convenience in operation the outer free end of the lever may be provided with a knob 28. The lever normally underlies the end 15 of lever 12 and is limited in its downward movement in the slots by the detent 21.

The lever arm 16 normally forms a stop to hold the lever 26 from returning to extreme top position until the inserted coin has been pushed by lever 26 past surface 19 to recess 20 of lever 12, allowing the coin to fully clear lever 12 and fall into box 3.

Pivoted at its upper end and to lever 26 is a rack bar 29 movable at its lower end in a guide 30 and in engagement with a motion transmitting gear 31 loose on a shaft 32 on which the guide is free to oscillate. When the lever 26 is moved

downward the rack bar 29 will rotate gear 31 to bring a pin 33 thereon into engagement with a contact piece 34 on a ratchet wheel 35 fixed to the shaft 32 to turn the ratchet wheel a predetermined distance in its orbit of rotation. Fixed also to the shaft 32, side by side with the ratchet wheel, is a cam or eccentric 36 having a peripheral surface 37 provided with a seat depression 38 therein. This depression normally receives an idle roll 39 on a locking and releasing lever 40 pivoted at one end 41 in the casing and having a locking tooth 42 at its opposite or free end. A spring 43 normally holds the lever 40 with its roll 39 engaging the seat depression and its tooth 42 in engagement with the tooth of a gear wheel 44. This wheel 44 is loose on a shaft 45 journaled in the casing. The gear 44 meshes with the teeth of the rack bar 4, and is thus coupled through the rack bar to the typewriter carriage. When, therefore, the gear 44 is locked from movement by the lever 40 the gear 44 will lock the typewriter carriage from movement, so that the typewriter cannot be operated. On the other hand when the lever 40 is disengaged from the gear 44 the gear 44 will be free to turn and the typewriter to be operated, during which the gear will oscillate or rotate in opposite directions as the carriage travels forwardly and backwardly.

The operation of the parts so far described is as follows:

When a coin is inserted into slot 5 it drops into contact with surface 18 of lever 12, by which its further travel is blocked until lever 26 is operated. The coin will be held in this position until lever 26 is depressed as lever 26 in its normal position lies in the path of movement of arm 15 and thus prevents outward swinging movement of lever 12. Upon the depression of lever 26, however, and its passage below the level of arm 16 and engagement of lever 26 with the top of the coin, lever 12 is free to move and, under the pressure of the lever 26 on the coin and pressure of the coin on the surface 18, the lever 12 tilts out sufficiently to move detent 21 out of the way of the coin and allow the coin to drop down through passage portion 9 and into the passage portion 8. Normally the detent 21 blocks downward movement of the lever 26 into the passage portion 8, but when a coin is inserted and engages the surface 18 downward, as above described, pressure of the lever 26 on the coin will cause the lever 12 to be swung outward and the detent 21 to be moved out of the path of lever 26, allowing the coin to drop into the receptacle 3 and the lever 26 to be moved a full stroke downward in the slots. As the coin passes the surface 18 it engages the surfaces 19 and 20 which facilitates its passage under pressure of the lever 26 and ensures a continuance of the coin pressure on the lever 12 to move it outward to its fullest extent. When the lever 26 is fully depressed the lever 12 is swung backward to normal position by its spring, and subsequent return of the lever 26 upward to normal position is allowed by contact of said lever with surface 23 of detent 21, by which the latter will be tilted upward to allow lever 26 to pass.

On the down stroke of the lever 26 the rack 29, gear 31, ratchet wheel 35 and eccentric 37, are operated to force the locking lever out of engagement with gear 44, thus releasing the typewriter carriage to permit the typewriter to be operated. As before described, in the backward and forward movements in the operation of the typewriter the gear 44 will be rotated in opposite directions. The rotations of this gear 44 in one direction are employed to transmit motion to a meter mechanism hereinafter described to effect the return of the lever 40 to locking position and to prevent further operation of the typewriter after the typewriter has been used to write a certain number of lines or amount of matter and until another coin is deposited to permit the typewriter to be further operated.

An auxiliary locking lever 46 is also provided to lock the gear 44 from movement at certain times. This lever is fixed to a shaft 47 and is normally held in retracted position when lever 26 is up by a spring 48. One end of this lever 46 is provided with a tooth 49 to engage the gear 44 and the other end of said lever is provided with a contact arm 50 normally overhanging the lever 26 and engageable thereby.

When the person inserting the coin fails to push lever 26 all of the way down slot 11, the machine fails to give its full capacity of inches for written matter. This is overcome by coin having to travel all the way down past surface 19 before lever 12 can return to its normal position, moving 15 with portion 16 from the path of travel of lever 26 on its way back to the upper position.

While the lever 26 is only a short distance down from its top position, it allows bar 50 to drop, engaging point 49 in the gear wheel 44, locking the machine until the coin has been pushed through, and the wheel 36 has been moved to full position. The lever 26 then returns to the top, releasing the gear 44 by its action against lever 50. The machine is now ready to write.

Any time that the user fails to push the coin through the machine the first time, lever 26 is in such a position that the user, by pushing down two or more times, can push coin into box without upsetting the full use of the machine.

Gear 44 cannot turn to allow the typewriter to be operated on deposit of a coin until the coin has been pushed all the way down into the coin receiver and lever 26 has thereafter returned fully to normal position.

A meter is provided to determine the extent to which the typewriting machine may be used for a writing action in return for the coin of the certain denomination paid. This comprises a spring pressed pawl 51 on the wheel 44 which engages the teeth of a ratchet wheel 52 fixed to the shaft 45 which has an eccentric or cam portion to operate an eccentric strap 53 loose on said shaft. This eccentric strap is provided with a pawl 54 engaging the teeth of the ratchet wheel 35 which has been turned a measured distance or distance of a predetermined number of teeth in one direction by operation of the lever 26 and rack bar 29 following the deposit of a coin. Each time the typewriter carriage is moved a full traverse in one direction (which may be either forward feeding direction or backward direction or retraction) gear 44 will be turned in one direction and will transmit motion through pawl 51 and ratchet wheel 52 to the eccentric 53 and pawl 54 to turn the gear 35 and eccentric 36 to a certain distance backward. This will be repeated until the number of typewriter carriage movements allowed is completed, at which time the wheel 52 and eccentric 36 will be returned to normal position and depression 38 will be brought opposite roller 39, allowing lever 40 to be actuated by its spring 43 to return it to locking position in which it will again lock the wheel 44 from

rotation. When wheel 44 turns in the opposite direction to that in which it is designed to rotate the ratchet wheel 52 the pawl 51 will slide over the teeth of the ratchet wheel. A pawl 55 is provided to prevent rotation of the ratchet wheel 52 in other than its intended direction.

The machine may be adapted to be controlled by the deposit of a dime, a quarter, or a coin of any other denomination to allow a given number of lines of matter to be written. The extent of use of the machine, or the number of lines allowed to be written on deposit of any certain coin, may be regulated by the size of the gear wheel 44, or the length of the stroke of the eccentric 53 with the proper teeth on the ratchet wheel 35, or by the size of the wheel 35, as will be readily understood.

As stated, when a coin is inserted into slot portion 6 and the lever 26 is pushed down below the level of arm 16, the pressure of the coin engaging surface 18 will move the lever 12 laterally to bring arm 16 above lever 26, so that lever 26 cannot be moved back to its extreme starting position again until the coin has been forced past the surfaces 18, 19 and 20 and fallen into box 3. The lever 26 must be pushed all the way down in order to set the device to adapt the typewriting machine to give its full capacity for the writing of the determined number of lines paid for by the insertion of a proper coin. If a person inserting the coin fails to push the lever 26 all the way down slot 11, the device will not be set to allow the typewriter to be operated, since, if lever 26 is only pushed part way down from its top position, bar 50 will drop and engage point 49 in gear wheel to lock the typewriting machine from action until the coin has been pushed all the way down. Movement of the lever 26 all the way down will cause wheel 36 to be moved to full position, allowing lever 26 to return to its top position and releasing the gear by its action against lever 50, whereupon the typewriting machine is unlocked so that writing may begin. When the lever 26 is only pushed partly down and the machine is not unlocked, the operator will be advised by the failure of the locking mechanism to release that the lever has not been fully operated, and may correct the error without being deprived of the loss of this coin or of the full use of the typewriting machine when the locking mechanism is properly released, by simply pushing down on lever 26 until the releasing action is effected.

From the foregoing description, taken in connection with the drawings, the construction and mode of operation of my improved coin controlled typewriter locking mechanism will be readily understood and its advantages appreciated by those versed in the art without a further and extended description. While the construction of mechanism shown herein is preferred, it is to be understood that I do not limit my invention thereto, as many changes falling within the scope of the appended claims may be made without departing from the spirit or sacrificing any of the advantages of the invention.

Having thus described my invention, I claim:

1. The combination with a typewriter machine frame and its printing mechanism including a platen supporting carriage mounted on the machine frame, of unitarily supported means for controlling the movements of the carriage comprising a supporting frame arranged in juxtaposition to the machine frame and carriage, locking and releasing means carried by the supporting frame for locking the carriage against movement and adapted to be set to release the carriage and permit operation of the carriage so as to allow a predetermined number of lines of matter to be written and then to relock the carriage against movement, and means carried by the supporting frame for setting said locking and releasing means for carriage locking and releasing actions, said locking and releasing means including a locking and releasing member mounted on the supporting frame, a rack bar reciprocally mounted on the supporting frame and secured to and movable with the typewriter carriage, and an oscillatory gear mounted on the supporting frame and meshing with the rack bar and controlled in action by and controlling the action of the locking and releasing means and adapted to be engaged and disengaged by said locking and releasing member.

2. The combination with a typewriter printing mechanism including a platen supporting carriage, of means for controlling the movements of the carriage comprising a locking and releasing means for locking the carriage against movement and adapted to release the carriage and permit operation of the carriage so as to allow a predetermined number of lines of matter to be written and then to relock the carriage against movement, said means including a rotary member and a locking and releasing member controlled thereby, means for rotating said rotary member a given distance from a normal position to release the locking member and to permit said rotary member to thereafter have an intermittent step by step movement for return to normal position for reengagement with the locking and releasing member, an actuating element secured to and movable with the carriage, an oscillatory element movable in opposite directions by the actuating element and adapted to be engaged and disengaged by the locking and releasing member, and means operated by the oscillatory element when disengaged from the locking and releasing member for intermittently moving the rotary member.

3. In locking and releasing means for typewriting machines, a supporting frame, a reciprocatory member mounted on the frame and adapted for attachment to and movement back and forth with a typewriter carriage, a rotatable member mounted on the frame and in gear with the first-named member so as to be directly driven by the carriage and movable in opposite directions thereby, said members coacting when the rotatable member is locked from rotation to directly lock the carriage from travel in either direction, a locking element mounted on the supporting frame and engageable with and disengageable from the rotatable member for locking and releasing said rotatable member, controlling means mounted on the supporting frame for controlling the locking element, means for actuating the controlling means to release the locking element, and means mounted on the supporting frame and operated by the rotatable member for actuating the controlling means to relock said locking element at the end of a predetermined number of back and forth movements of the rotatable member.

4. In a coin controlled locking and releasing means for typewriters, means for holding the typewriter mechanism from operation and releasing it to permit of its operation, controlling means controlled by the machine action through the first named means and directly by the movements of the typewriter carriage to permit the re-

leased mechanism to be operated for the writing of a predetermined amount of matter and then controlling the first-named means to relock the typewriter mechanism, means for initiating a releasing action of the first-named means, and a frame unitarily supporting all of said means, and adapted to be mounted in proximity to the typewriter to dispose the first-named means in position for co-operation with the typewriter carriage, said first-named means including a reciprocatory gear member adapted to be fixed to the carriage to travel back and forth therewith and an oscillatory gear member in mesh with the reciprocatory gear member, said members cooperating under control of the controlling means to directly lock the typewriter carriage from movement or release it for movement, and said controlling means including a locking and releasing element engageable with and disengageable from the oscillatory gear member for locking the same from movement and releasing the same for movement.

5. In a typewriter controlling mechanism, a supporting frame, a rack bar supported and guided by the frame and adapted for attachment to and back and forth movement with the typewriter carriage, an oscillating gear mounted on the frame and meshing with and oscillated by the rack bar, a locking member mounted on the frame for engagement with and disengagement from the gear to respectively lock and release the gear, a step by step device mounted on the frame and movable uninterruptedly in one direction to release the locking member and step by step in the same direction to cause it to lock the gear, means mounted on the frame and actuable to move said device in the first-named direction, and means mounted on the frame and actuable by the gear for moving said device step by step.

6. In locking and releasing means for typewriting machines, a supporting frame, a reciprocatory member mounted on the frame and adapted for attachment to and movement back and forth with a typewriter carriage, a rotatable member mounted on the frame and engageable with the first-named member and movable in opposite directions thereby, a locking element mounted on the frame and movable into and out of engagement with the second-named member for locking and releasing said second-named member, and thereby operating through the first and second named members to lock or release the typewriter carriage, controlling means mounted on the frame for controlling the locking element, means mounted on the frame for actuating the controlling means to relock said locking element at the end of a predetermined number of back and forth movements of the second-named member.

7. In a coin controlled locking and releasing means for typewriters, a support adapted to be disposed alongside a typewriter frame in proximity to the typewriter carriage, means mounted on the support for holding the typewriter mechanism from operation and releasing it to permit of its operation, means mounted on the support and controlling and controlled by the first-named means to release and permit the released mechanism to be operated for the writing of a predetermined amount of matter and then controlling the first-named means to relock the typewriter mechanism, and means mounted on the support for initiating a releasing action of the first-named means, such first-named means including a gear element on the carriage, a gear element on the frame meshing therewith, and a locking and releasing element on the frame engageable with and disengageable from the gear element on the frame and operating for holding the typewriter mechanism from operation and releasing it for operation by locking and releasing the carriage.

8. In a typewriter controlling mechanism, a support adapted to be disposed alongside a typewriter frame in proximity to the typewriter carriage, a rack bar on said support for attachment to and back and forth movement with the typewriter carriage, an oscillating gear on the support meshing with and oscillated by the rack bar, a locking member on the support engageable with and disengageable from the gear for locking and releasing said gear, a step by step device on the support and movable uninterruptedly a distance to release the locking member and movable step by step a distance to cause it to lock the gear, means on the support actuable to move said device in the first-named direction, and means on the support actuable by the gear for moving said device step by step, the rack bar and gear serving when the gear is locked and released as a locking means to lock and release the carriage.

9. In a typewriter controlling mechanism, a supporting frame, a rack bar mounted on the frame and adapted for attachment to and back and forth movement with the typewriter carriage, an oscillatory gear mounted on the frame and meshing with and oscillated by the rack bar, a locking member mounted on the frame and engageable with and disengageable from the gear for locking and releasing said gear, a step by step device mounted on the frame and movable uninterruptedly a distance to cause the locking member to release the gear and movable a distance step by step to cause the locking member to lock the gear, and means mounted on the frame and actuable by the gear for moving said device step by step to cause movement of the locking member to locking position.

10. In a typewriter controlling mechanism, a supporting frame, a rack bar mounted on the frame and adapted for attachment to and back and forth movement with the typewriter carriage, an oscillatory gear mounted on the frame and meshing with and oscillated by the rack bar, a locking member mounted on the frame and engageable with and disengageable from the gear for locking and releasing said gear, a rotary step by step device mounted on the frame and rotatable a distance to release the locking member and rotatable a distance to cause it to lock the gear, means mounted on the frame and actuable to rotate said device for a gear releasing action, and means mounted on the frame and actuable by the gear for rotating said device step by step for a gear relocking action.

11. In a typewriter controlling mechanism, a supporting frame, a rack bar mounted on the frame and adapted for attachment to and back and forth movement with the typewriter carriage, an oscillatory gear mounted on the frame in mesh with and oscillated by the rack bar, a pivoted locking member mounted on the frame and engageable with and disengageable from the gear for locking and releasing said gear, a rotary device mounted on the frame and movable uninterruptedly a predetermined distance in one direction to release the locking member and movable step by step the same distance in the same direction to cause said member to lock the gear, means mounted on the frame and actuable to move said device in the first-named direction,

and means mounted on the frame and actuable by the gear for moving said device step by step.

12. In a typewriter controlling mechanism, a supporting frame, a rack bar mounted on the frame and adapted for attachment to and back and forth movement with the typewriter carriage, an oscillatory gear mounted on the frame and in mesh with and oscillated by the rack bar, a locking member mounted on the frame and engageable with and disengageable from the gear for locking and releasing said gear, a controlling device mounted on the frame and movable uninterruptedly a predetermined distance in one direction to release the locking member and movable step by step thereafter in the same direction to cause said member to lock the gear, manually operable means mounted on the frame and actuable to move said controlling device to cause the locking member to release the gear, and a device mounted on the frame and actuable by the gear for moving said controlling device step by step to cause the locking member to lock the gear.

13. In a typewriter controlling mechanism, a supporting frame, a rack bar mounted on the frame and adapted for attachment to and back and forth movement with the typewriter carriage, an oscillatory gear mounted on the frame and in mesh with and oscillated by the rack bar, a locking member mounted on the frame and engageable with and disengageable from the gear for locking and releasing said gear, a controlling device mounted on the frame and movable uninterruptedly a predetermined distance in one direction to cause the locking member to release the gear and movable step by step thereafter to cause the locking member to lock the gear, means mounted on the frame and including an actuating member actuable to move the controlling device uninterruptedly to release the locking member, a device mounted on the frame and actuable by the gear for moving said controlling device step by step to thereafter effect locking of the gear to the locking member, and means mounted on the frame for preventing movement of the gear after being released by the locking device until the said actuating member has been actuated and returned to normal position.

14. The combination with a typewriter machine frame and its printing mechanism including a platen supporting carriage mounted on the machine frame, of unitarily supported means for controlling the movements of the carriage comprising a supporting frame independent of the machine frame, and a locking and releasing means carried thereby for locking the carriage against movement and adapted to be set to release the carriage and permit operation of the carriage so as to allow a predetermined number of lines of matter to be written and then to relock the carriage against movement, said locking and releasing means including a rack bar mounted on the supporting frame and secured to and movable with the carriage, an oscillatory gear mounted on the supporting frame and meshing with the rack bar, and a locking element engageable with and disengageable from said gear.

15. The combination with a typewriter machine frame and its printing mechanism including a platen supporting carriage mounted on said machine frame, of unitarily supported means for controlling the movements of the carriage comprising a supporting frame independent of the machine frame, a locking and releasing means carried by the supporting frame and adapted to lock the carriage against movement and to be set to release the carriage and permit operation of the carriage so as to allow a predetermined number of lines of matter to be written and then to relock the carriage against movement, and means supported by the supporting frame for setting said locking and releasing means, said locking and releasing means including a member mounted on the supporting frame and secured to and movable with the typewriter carriage, an oscillatable member on the supporting frame in engagement with and oscillated by the first-named member, a locking and releasing element on the supporting frame engageable with and disengageable from the oscillatable member, and means for controlling said locking and releasing element.

16. The combination with a typewriter printing mechanism including a platen supporting carriage, of unitarily supported means for controlling the movements of the carriage comprising a frame, and locking and releasing means carried by the frame and adapted to lock the carriage against movement and to be set to release the carriage and permit operation of the carriage so as to allow a predetermined number of lines of matter to be written and then to relock the carriage against movement, said locking and releasing means including a rack bar mounted on the frame and secured to and movable with the typewriter carriage, an oscillatory gear mounted on the supporting frame and meshing with the rack bar, a locking and releasing element mounted on the supporting frame and engageable with and disengageable from the gear, a device controlling the engaging and disengaging movements of the locking and releasing element, manually operable means for moving said device to disengage the locking and releasing element from the gear, and means operated by the gear for thereafter moving said device to effect the subsequent engagement of the locking and releasing element again with the gear.

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