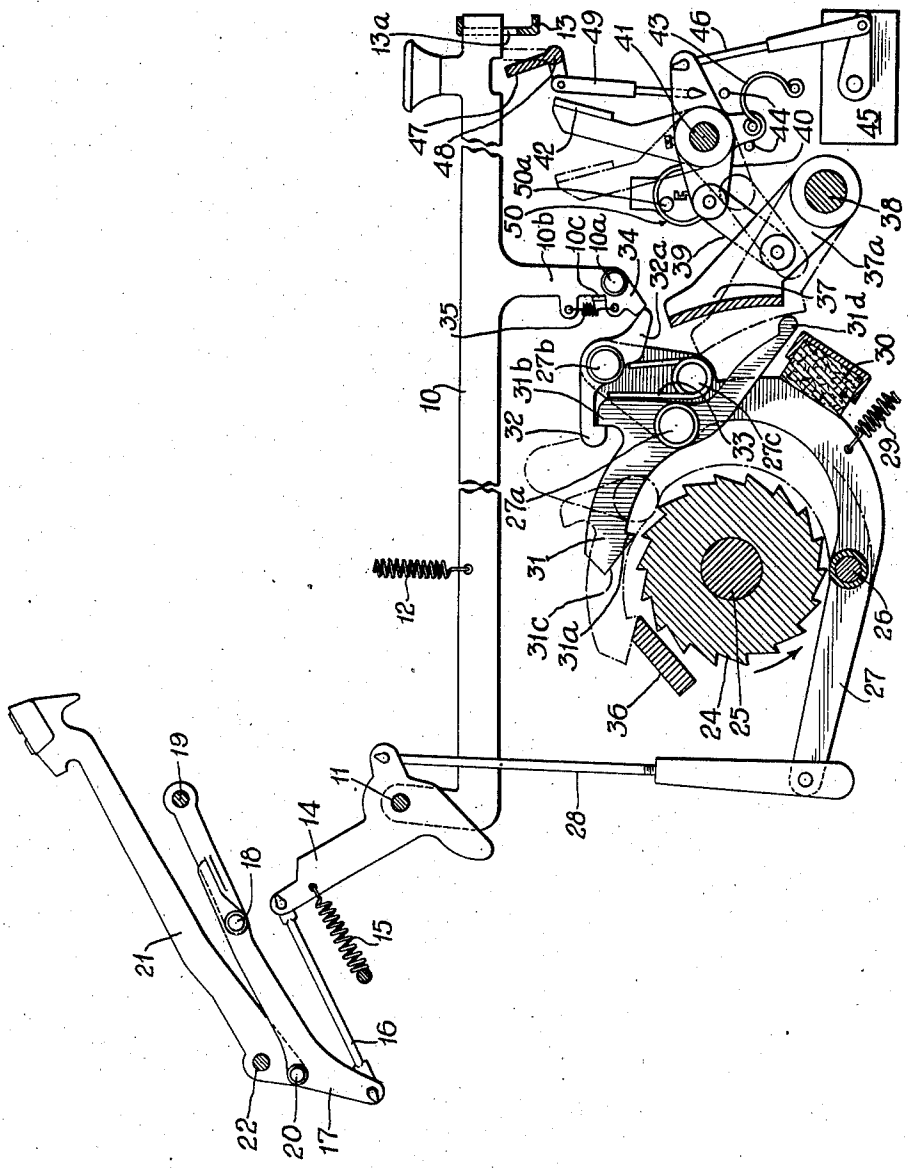
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TYPEWRITING MACHINE

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TYPEWRITING MACHINE

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This invention relates to typewriting machines.

The primary object of the invention is to provide an improved power operating mechanism for office machines, such as typewriters and typewriter computing machines.

An object is to provide a power operating mechanism which may be released by the operator in the event that the power mechanism jams in a partly operated position.

An object is to provide a power type bar operating mechanism with means to release the power mechanism when it jams due to piled up type.

In the use of power operated typewriting machines it quite frequently happens that the keyboard is operated with the machine switch on but with the current supply disconnected for some cause as, for example, when the connecting cord accidentally becomes dislodged from the electrical outlet. This frequently happens in offices when people trip over the cord or, in sweeping up, the cleaners' appliances such as brooms and vacuum cleaner nozzles often catch on the cord and jerk it loose from the outlet. The operator, returning to the machine and not knowing that the cord is disconnected, may turn on the switch and operate a plurality of keys in rapid succession before discovering the motor is not running. This causes the power mechanism to become tripped with the result that when the plug is replaced in the outlet and the current supply restored, a plurality of type bars or other devices operate together and pile up or jam in the type basket thereby stalling the motor.

As a general rule, the operators of the machines are not capable of intelligently coping with such a situation and in some types of power operated typewriter, it is necessary to individually restore to normal position the power actuating mechanism for every type bar or device which has been set in operation in this manner and resulted in a jam. As a result, the operator often must wait until a serviceman responds before the machine can be restored to use.

The object of the present invention, therefore, is to provide a convenient means enabling the operator to restore all of the tripped power mechanisms and resume the operation of the machine without waiting for a serviceman.

Other objects of the invention will be pointed out in the following description and claims and illustrated in the accompanying drawing, which disclose, by way of example, the principle of the invention and the best mode, which has been contemplated, of applying that principle.

The single figure of drawings represents a vertical section of a power type bar operating mechanism for use in a typewriting machine.

The machine is provided with the usual keys 10 which are pivoted on the fulcrum wire 11 and urged in a counterclockwise direction by springs

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like 12. The keys may be guided in a suitable key comb 13 having key guide slots 13a, the ends of which act as stops for the keys 10. Also pivoted on the fulcrum wire 11 are the sub-levers 14 urged in a counterclockwise direction by springs 15. The sub-levers 14 are connected by links 16 to the arms of toggle levers 17 which form part of the toggles 18, the other ends of the toggles being pivoted on a curved fulcrum wire 19. The toggle levers 17 are pivoted at 20 to the type bars 21 which in turn are pivoted on the curved fulcrum wire 22.

When a sub-lever 14 is actuated in a clockwise direction, the toggle lever 17 is actuated by the link 16 in a counterclockwise direction about the pivot 20 causing the latter and toggle lever 17 to travel in an arc in a counterclockwise direction about pivot 22, thereby driving the type bar 21 in the same direction toward the usual platen 23.

The power operating mechanism includes a toothed member 24 carried by shaft 25 and rotating in the direction of the arrow while the machine is in use. The member 24 is often termed a snatch roll in the art. Pivoted on the cross rod 26 are the actuating levers 27, each of which has one of its arms connected by a vertical link 28 to one arm of one of the sub-levers 14. Actuating levers 27 are urged in a clockwise direction by springs 29 against the resilient stop strip 30 preferably formed of sound deadening material such as felt or rubber.

The opposite arm of each actuating lever 27 has pivoted at 27a a three-arm dog 31 having a tooth 31a capable of engaging the teeth in the member 24 but normally held clear of said teeth by a latch pawl 32 pivoted at 27b on the actuating lever 27. The pawl 32 normally hooks over one arm 31b of the pawl 31 and both the dog 31 and the pawl 32 are urged in a counterclockwise direction by a common spring 33 coiled about a pin 27c carried by the lever 27, the branches of the spring engaging the arm 31b and the tail 32a of the pawl 32. The tail of pawl 32 underlies the end of a non-repeat, release pawl 34 pivoted at 10a to a downward extension 10b of the key lever 10. A spring 35, anchored to the pawl 34 and to a lug carried by the extension 10b, normally urges the pawl 34 in a clockwise direction against a stop lug 10c formed in the extension 10b.

The member 24 rotates continually in the direction of the arrow while the machine is in use and if a key 10 is depressed the pawl 32 will be rocked in a clockwise direction through engagement of the nose of pawl 34 with tail 32a of the pawl 32 thereby releasing the three-arm dog 31 which will be rocked counterclockwise by the spring 33 to engage tooth 31a with the member 24. Thereafter, the dog 31 will be drawn to the

left, rocking the actuating lever 27 in a counterclockwise direction and drawing down the link 23. This, of course, rocks the sub-lever 14 clockwise and actuates the type bar 21 to printing position. Shortly before the type bar reaches the printing position, the inclined edge 31c on the nose of the dog 31 engages the beveled edge of a cross bar 36 which cams the dog 31 clear of the member 24 into relatching position by the latch 32 as shown by the dot-dash line. The stroke of the type bar is completed by momentum as the bar 36 preferably will be positioned so that the dog 31 is disengaged from member 24 and relatched at a predetermined time before the type bar 21 completes its stroke to printing position.

The springs 15 and 29 restore the type bar and the operating mechanism connected thereto to the position shown in the drawing thereby bringing the tail of pawl 32a back into cooperation with pawl 34. If the operator holds the key depressed, the end of the tail 32a of pawl 32 instead of moving past the nose of pawl 34 will engage the side of said pawl and rock it counterclockwise in which position the parts will remain as long as the key is held depressed. Thus it is impossible to release the pawl 32 a second time without permitting the key 10 to restore. When the key is released, the pawl 34 will snap over the tail of the pawl 32 in readiness for another operation. If it is desired to obtain repeated operation of a type bar or other actuated device, as sometimes is the case, the pawl 34 may be omitted and the extension 10b may be shaped to directly engage the tail of pawl 32 so that said pawl will be automatically released at the end of the restoring movement to cause another operation with the key held depressed.

As a general rule, the type bars are actuated through an arc of 90° and, in a power operated machine, the mechanism is designed so that approximately the last 10° of the stroke of the type bar is effected through momentum in printing lower case letters. In printing capital letters, however, the mechanism may be arranged so that the power mechanism is not released until the type bar reaches, or is very close to, the printing point, thereby producing a somewhat heavier blow. For this purpose, means may be provided to shift the bar 36 downwardly and to the left during a case shifting operation to enable dogs 31 to remain in engagement with member 24 for a slightly longer time.

Member 24 is driven by an electric motor connected by a suitable extension cord to the nearest electrical outlet. It is quite evident from the drawing that, if the member 24 is not rotating, the depression of a key 10 will release the dog 31 and the arm 31b will be snapped under the end of the pawl 32 and hold the pawl 32 disengaged. If this is done with several keys and then the power is turned on the machine, several type bars will be operated together and so will jam in the type basket in a tight mass and stall the driving motor.

It is not sufficient to turn off the current to the motor and disentangle the type bars from each other since the dogs 31 will still be hooked over the teeth in the member 24 and prevent the type bars from being restored to normal position as they are disengaged from each other in the type basket. The dogs 31, being inaccessible to the operator, ordinarily cannot be reset conveniently to relatching position, making it necessary to send for a serviceman before the machine can be restored to use.

According to the present invention, means is provided to enable the operator to relatch the dogs 31 regardless of the extent to which the type bars may have been operated before the motor stalls. For the purpose of freeing the dogs from the member 24 and relatching them, there is provided a resetting member 37 in the form of a bail having side arms 37a and carried by a shaft 38 journalled in the framework. One arm 37a of the bail 37 is connected by a link 39 to an arm of a three armed lever 40 attached to a stub shaft 41 journalled in and extending exteriorly of the base of the machine. A hand lever 42 is secured to a stub shaft 41 within convenient reach of the operator. The cross bar of the bail is slightly cylindrically concave with an axis through the center of the shaft 26 when the bail 37 is in the dot-dash position. In this position the concave surface engages the third arm 31d of the dog 31.

Normally, while the machine is in operation, the bail 37 is held in the position of the drawing by a toggle spring 43 hooked around a fixed pin and a pin carried by one arm of the lever 40 which is held by the spring against the lower of two stop pins 44 carried by the base of the machine.

Let it be assumed that a type bar has only been partially operated due to a current failure so that the dog 31 still engages member 24 with the latch 32 resting on top of the arm 31b. The third arm 31d of the dog 31 will have been rocked counterclockwise so that the rounded nose thereof extends across the broken line representing the curved surface of the bail 37. If now the lever 42 is rocked counterclockwise by hand, the bail 37 will be actuated in the same direction and the engagement of the curved surface of the bail with the third arm 31d will cause the engaged dog 31 to be rocked back to latching position thereby permitting the type bar and its actuating mechanism to restore to normal position under the influence of the springs 15 and 29. If it should happen that a plurality of the type bars have jammed together in the basket and stalled the motor, the current may be turned off from the motor and the lever 42 operated to relatch all of the dogs 31 for the operated type bars. One or two of the type bars may now return to normal position if they are free. However, usually the type bars jam together so tightly that they must be freed one by one and allowed to fall back to normal position.

The foregoing mechanism has many practical advantages and features of utility other than functioning purely as a means of correcting the troubles arising from current interruptions, such as accidental disconnection of the plug from the outlet. For example, the lever 42 may be connected to the machine switch, if desired, so that rocking the lever to the position of the dot-dash position results in turning off the current thereby relieving the stalled motor simultaneously with the release of the operating mechanism for the type bars which caused the motor to stall. The lever 42 may be the usual switch lever or it may actuate a separate switch 45 through a link 46 connected to the third arm of lever 40.

In machines of this type, when the switch lever is turned to the off position, mechanism is provided to lock the keys against depression. The locking of the keys in one form of machine is effected by means of a locking bar 47 pivoted at 48 to the base of the machine. When the switch is turned to the off position the bar swings clockwise to prevent depression of the keys. In

the present case, this result may be obtained by a link 49 connected to lever 40 and locking bar 47. Thus the lever 42 may be utilized to turn off the current and lock the keyboard against accidental depression of a key while freeing the jammed type bars and also resetting the dogs 31 for the jammed type bars to permit them to restore to normal.

It is also possible to use the bail 37 as a means of discouraging or even preventing tampering with the machine. It has been found that in the absence of the person charged with the responsibility for the machine, such as a stenographer, that unauthorized persons who are not skilled in the use of machines of this type often tamper with it causing damage to the machine and unnecessary wear from unauthorized use. If bail 37 is left in the position of the dot-dash lines at all times, except while the machine is in use, the operation of a key 10 will have no effect, latch 32 being merely rocked idly.

If desired, a suitable lock may be provided to hold the lever 42 in the dot-dash position of the drawing which not only would have the effect of preventing releasing of the dogs 31 but also of preventing depression of a key and turning on the motor.

The lock may be placed in any suitable relation to the dog release mechanism but conveniently may consist of a conventional pin tumbler lock 50 of the "Yale" type having a barrel settable to either of two positions 180° apart in both of which the key may be withdrawn. A pin 50a on the barrel is moved 180° from the position of the drawing when the key is turned to locking position and by engaging the edge of one of the arms of lever 40, rocks the latter counterclockwise to place bail 37 in the dog release position denoted by the dot-dash lines in the drawing. When bail 37 is locked in this position the machine cannot be operated by power since none of the dogs 31 can be released by means of keys 10. Even if the locking bail or bar 47, switch 45 and the connections to lever 40 are omitted or tampered with, the machine is still effectively locked against casual tampering.

There is some psychological advantage in the use of bail 47 and the switch connections; however, because a person bent on tampering will be discouraged by finding both the keys and switch locked whereas, without these features, there may be some temptation to try to find out why a machine that is not obviously locked will not work.

It will be understood that the keyboard locking bail or bar 47, the lock 50, and the switch 45 are not essential features, but merely advantageous under some conditions, since the spring 43 and stop pins 44 constitute a means for holding the member 37 in a position to prevent release of dogs 31 by keys 10. If desired, the key of lock 50 may be used as a manual means of operating the member, dispensing with the lever 42, by simply connecting pin 50 to one of the arms of lever 40 by means of a suitable link. It will be understood, therefore, that the invention may be amplified in the ways disclosed and altered as required to suit different situations without departing from the basic features disclosed.

While there have been shown and described and pointed out the fundamental novel features of the invention as applied to a single embodiment it will be understood that various omissions and substitutions and changes in the form and details of the device illustrated and in its operation may be made by those skilled in the art, without departing from the spirit of the invention. It is the intention, therefore, to be limited only as indicated by the scope of the following claims.

What is claimed is:

1. In combination with a power operating mechanism for the type bars and other devices of a typewriting machine wherein there is provided a power driven actuator and a power operating device for each type bar or device, each device including means releasable for operative engagement with the power driven actuator to actuate the type bar or device; means acting directly upon the releasable means for disengaging the releasable means from the operating member, and manual means for operating the disengaging means.

2. In a power operating mechanism for the actuable devices of a typewriter or other office machine controlled by keys in which the operation of the keys trips elements subsequently effective to cause said devices to be actuated by power, means for moving said elements to restore tripped and incompletely operated elements to untripped condition, and a manual member for actuating the restoring means.

3. A power mechanism for actuating the type bars and other devices of a typewriting machine, comprising a toothed actuator, an actuating lever connected to the type bar, a dog mounted on the actuating lever and having a tooth engageable with a tooth of the actuator to enable the actuating lever to be operated by the actuator, releasable means to hold the dog clear of the actuator, means to disengage the dog from the actuator and restore said dog to the influence of the holding means, and a manual member for actuating the disengaging means.

4. In a power mechanism for typewriters and like machines, a power operated actuating member, an actuating element engageable with the actuating member for operation by said member, means for engaging said element with said member, means for automatically disengaging said element from said member after said element has been actuated a predetermined extent by said member, and manually operable means for positively disengaging said element from said member, without disturbing said member, in the event the element is not moved by said member far enough for the automatic disengaging means to take effect.

5. In a power operating mechanism for a type bar or other device to be actuated, a power driven operating member, an actuating device adapted to be operatively engaged with said member, means for automatically disengaging said device from said member after a full operation of said device by said member, and a supplemental disengaging means for operating said device to disengage it from said member without disturbing said member when said device has not been operated by said member far enough to be automatically disengaged by the automatic disengaging means.

6. In a power operating mechanism for the type bars and other devices of a typewriting machine, a rotary actuator, actuating devices connected to the type bars and other devices of the typewriting machine and adapted to be coupled selectively to the actuator for selective operation of said type bars and other devices of the typewriting machine, means for automatically uncoupling each of the actuating devices when the operated type

bar or other device has been actuated a sufficient extent, and means common to all of said devices and operable to uncouple from said actuator, without disturbing said actuator, any and all of the actuating devices which may be incompletely operated.

7. In a power mechanism for typewriters, a rotary toothed power driven actuator; actuating devices for the type bar mechanisms and other mechanisms of a typewriter, each device including a toothed element engageable with a tooth of the actuator to couple the associated device to the actuator for operation by the latter; means coacting with the toothed elements after a predetermined extent of movement of the elements by the actuator to automatically disengage the elements from the actuator, and a member common to said toothed elements and shaped to be engageable with any of said elements in any of their successive operating positions, said member being movable from a normally inoperative position to a position in which said member holds all said elements out of engagement with said actuator.

8. In a power operating mechanism for the type bars and other devices of a typewriting machine, a power operating member, a power actuated device releasable for engagement with said member and connected to the type bar or other device to be actuated, means to release said device, and normally ineffective means operable to restore the released device and settable to prevent release of said device when the releasing means is operative.

9. In a power operating mechanism for the type bars and other devices of a typewriting machine, a power operating member, a power actuated device releasable for engagement with said member and connected to the type bar or other device to be actuated, means to release said device, and locking means movable to a position to restore the power device and prevent a second release of said device.

10. In combination with a power operating mechanism for the type bars and other devices of a typewriting machine wherein there is provided a power driven actuator and a power operating device for each type bar or device including means releasable for operative engagement with the operating member to actuate the type bar or device; means for disengaging the releasable means from the operating member, a manual member for operating the disengaging means, and means to hold said manual member in a position in which the releasable means is prevented from engaging said actuator.

11. In a power operating mechanism for the actuable devices of a typewriter or other office machine controlled by keys in which the operation of the keys trips elements subsequently effective to cause said devices to be actuated by power, means to restore the tripped elements to untripped condition, a manual member for actuating the restoring means, and means to hold said manual member in a position to prevent tripping of any of said elements by means of the keys.

12. A power mechanism for actuating the type bars and other devices of a typewriting machine, comprising a toothed actuator, an actuating lever connected to the type bar, a dog mounted on the actuating lever and having a tooth engageable with a tooth of the actuator to enable the actuating lever to be operated by the actuator, releasable means to hold the dog clear of the actuator, means to disengage the dog from the actuator and restore said dog to the influence of the holding means, a manual member for actuating the disengaging means, and means to hold the dog disengaging means in disengaging position to prevent engaging said dog with said actuator.

13. A power mechanism for actuating the type bars and other devices of a typewriting machine, comprising a toothed actuator, an actuating lever connected to the type bar, a dog mounted on the actuating lever and having a tooth engageable with a tooth of the actuator to enable the actuating lever to be operated by the actuator, releasable means to hold the dog clear of the actuator, a member operable to restore the dog to control of the releasable means, and means to hold said member in the position in which the dog is fully restored to prevent engagement of the dog with the actuator.

14. In a power mechanism for typewriters and like machines, a power operated actuating member, an actuating element engageable with the actuating member for operation by said member, means for engaging said element with said member, means for automatically disengaging said element from said element after said element has been actuated a predetermined extent by said member, manually operable means for disengaging said element from said member in the event the element is not moved by said member far enough for the automatic disengaging means to take effect, and means to hold the manually operable means in a position to prevent subsequent engagement of the actuating element with the actuating member to thereby prevent operation of the power mechanism.

15. In a power operating mechanism for a type bar or other device to be actuated, a power driven operating member, an actuating device adapted to be operatively engaged with said member, means for automatically disengaging said device from said member after a full operation of said device by said member, a supplemental disengaging means for disengaging said device from said member when said device has not been operated by said member far enough to be automatically disengaged by the automatic disengaging means, and means to hold the supplemental disengaging means in a position to prevent engagement of the actuating device with the operating member.

16. In a power operating mechanism for the type bars and other devices of a typewriting machine, a rotary actuator, actuating devices connected to the type bars and other devices of the typewriting machine and adapted to be coupled to the actuator for operation of said type bars and other devices of the typewriting machine, means for automatically uncoupling each of the actuating devices when the type bar or other device has been actuated a sufficient extent, means common to all of said devices and operable to uncouple from said actuator any and all of the actuating devices which may be incompletely operated, and means to hold the second uncoupling means in uncoupling position to prevent operation of any of the actuating devices by the actuator.

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