

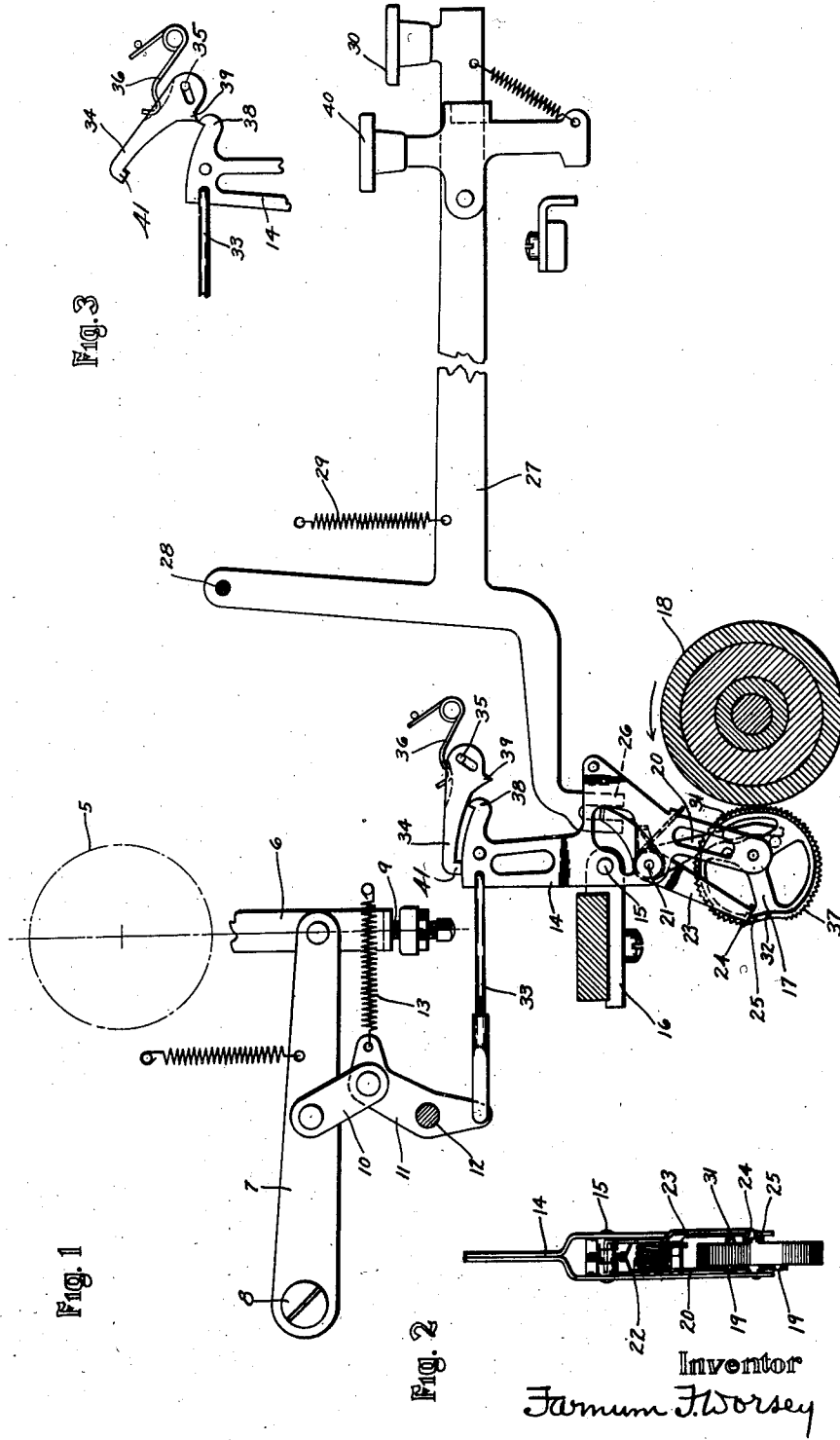
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POWER MECHANISM

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## POWER MECHANISM.

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This invention relates to power mechanism for use in a typewriter, or other machine, in which instrumentalities are actuated by a source of power under the control of manually operable keys. The present mechanism is particularly intended for use in performing operations such as case-shifting or tabular stopping, in which it is desirable that the carriage, tabular stop or other instrumentality be moved from one position to another upon the depression of a key, held in the new position so long as the key is held down, and then returned automatically to its original position upon release of the key.

It has previously been proposed to provide power-driven typewriters with mechanism for elevating or shifting the platen by means of a power-operated cam or the like, and to hold the platen in raised position by a latch or lock, this lock being withdrawn upon the release of the key. In such previous constructions the key has had to perform the double duty of controlling the power mechanism and of moving the lock, so that it could not be operated with as light a touch as the keys controlling the type-bars of the machine. One object of the present invention is to relieve the key of the duty of operating a lock, and this is accomplished by the use of mechanism in which the lock or latch is moved wholly by the power-mechanism. Another object of the invention is to produce a mechanism which is simple and reliable, and also rapid and positive in action.

To the foregoing ends the invention consists in the power mechanism hereinafter described, as it is defined in the annexed claims.

In the accompanying drawings, Fig. 1 is a side-elevation of the essential elements of power-mechanism embodying the present invention, with the parts in normal inactive position. Fig. 2 is an end-elevation of the cam-unit of the mechanism; and Fig. 3 is a detail view showing the latch in releasing position.

The invention is illustrated as embodied in power mechanism designed to elevate the platen of a typewriter in order to produce the case shifting operation. The platen is indicated at 5, and it may be understood to be supported upon upright members 6 of which only one is shown. Each member 6 is guided and moved by an arm 7 pivoted at 8 on the frame of the machine. In the normal lower position of the platen one of the members 6 rests upon an adjustable stop 9 on the frame of the machine.

The arms 7 are swung upwardly, to raise the

platen, by means of toggles each comprising a link 10 and a lever 11. The toggle-lever is fixed to a rock-shaft 12 journaled transversely on the frame. The toggle is normally held in bent position by a spring 13, but is moved into straight-line position to raise the platen.

The toggle is actuated by means of a cam-unit comprising a power-lever 14. This lever consists of two parallel sheet-metal members, as shown particularly in Fig. 2 and it is pivotally mounted by means of a stud 15, turning in a bearing 16 which is fixed to the frame of the machine. A cam 17 is journaled at the lower end of the power-lever 14, in position to co-operate with a power-roller 18. This roller is rotated constantly by any suitable source of power.

In the normal position of the cam, as shown in Fig. 1, its portion of least radius is presented toward the power-roller, and the cam does not engage the roller. The cam is provided, however, with two pins 19, one or the other of which is always in engagement with an arm 20, which swings between the side-members of the lever, upon a pivot-pin 21. A spring 22, connected with the spring-lever 20, presses the latter normally against the lower of the two pins, so that if the cam be free to turn it will be rotated slightly in a clockwise direction, and owing to its gradually increasing radius, it will thereby be brought into frictional engagement with the power-roller.

The cam is normally held inactive by a stop-lever 23, which is also mounted to swing about the pivot-pin 21. A lateral lug 24, at the lower end of the stop-lever, engages a detent 25 projecting from the side of the cam. The upper end of the stop-lever is bent laterally to engage the forked end 26 of a key-lever 27. This lever is pivoted at 28, and is normally held up by a spring 29. When the key 30, upon the key-lever, is depressed, the forked end 26 is swung to the left or rearwardly, and this causes the stop-lever to swing so that its lower end moves forwardly out of the path of the detent 25. The spring-arm 20 thereupon turns the cam into engagement with the power-roller, and the roller causes the cam to turn through approximately a half rotation. Owing to the gradually increasing radius of the cam, this half-rotation causes the power-lever 14 to be swung about its pivot 15. The rotation of the cam is arrested by a second detent 31, which is nearer the axis of the cam than the

detent 25, so that it comes into engagement with the stop-lug 24 when the stop lug is in the position to which it has been swung by the depression of the key. The cam is thus arrested in a position in which it is provided with a slight recess 32 in its periphery, this recess affording clearance between the cam and the power-roller.

The upper end of the power-lever is connected, by a rod 33, with the lower end of the toggle lever 11, and the swinging movement of the power-lever, just described, causes the toggle to raise the platen. The toggle is held in its straight-line position by means of a latch 34, which co-operates with the upper end of the power-lever. This latch swings upon a fixed pivot-pin 35, and it is pressed downwardly by a spring 36, so that when the power-lever has swung to the right the hooked end 41 of the latch drops into engagement with the upper left-hand angle of the lever. So long as the key 30 is held down the parts are retained in the new position just described, but upon release of the key, and the consequent rise of the key-lever, the stop-lever swings away from the detent 31 and back into the path of the detent 25. The spring-arm 20 thereupon turns the cam into engagement again with the power-roller, and the cam then turns through the remainder of its full rotation. The second lobe 37 of the cam is a little higher than the first lobe, so that it causes the upper end of the power-lever to swing slightly beyond the position in which it is held by the latch 34. This additional movement causes a lug 38 on the power-lever to ride under a shoulder 39 on the latch, the necessary yielding movement of the latch being permitted by the elongation of the opening which received the pivot-pin 35. Upon the continued rotation of the cam, the power-lever then swings to the left, and the lug 38 thereupon swings the latch upwardly as shown in Fig. 3, thus holding the latch momentarily clear of the power-lever, so that the latter may return to its normal position, and permit the platen to descend.

After the initial slight rise, the second half of the cam has a smooth falling curve. The spring 13 biases the carriage and platen to normal lower position, so that they impose no load on the cam during their return. The falling curve of the cam controls this return movement, however, and thus prevents the parts from moving too fast and from jarring when arrested by the stop.

The shift-key may be provided with the usual locking key 40 to be used in case the operator wishes the platen to remain indefinitely in raised position.

A substantially similar mechanism may be used to control a tabular stop or any other part which it is desired to hold in a given position so long as the controlling key is held down by the operator.

The details of the cam-controlling mechanism are not essential to the invention in its broadest aspects, and the invention is not, in general, limited to the details of construction of the illustrated embodiment thereof.

The invention claimed is:

1. In a typewriter or the like, the combination, with a part to be moved, and a manually operable key, of power-mechanism comprising: a constantly moving power-member, and an actuating-member, connected with said part and controlled by said key; and means for causing the actuating-member to be engaged with and moved by said power-member once when the key is moved in one direction and again when the key is moved in the opposite direction, the power-mechanism acting alternately to control movement of said part from one position to another and back again.

2. In a typewriter or the like, the combination, with a part to be moved, and a manually operable key, of power mechanism comprising: a constantly moving power-member; an actuating-member connected with said part and controlled by said key; a lock for retaining said part in one of its positions; and means for causing the actuating member to be engaged with and moved by said power-member once when the key is moved in one direction and again when the key is moved in the opposite direction, the power-mechanism acting, in the one case, to cause movement of said part from one position to another, and, in the other case, to release said lock and permit the return of said part to its first position.

3. Power-mechanism comprising: a power-roller; a cam-actuated member; a cam, rotatably supported thereby, adapted to co-operate with the power-roller but normally disengaged therefrom; and means for engaging the cam with the roller and for arresting its rotation after each of a succession of partial rotations; the cam being formed to move the cam-actuated member away from the roller during one partial rotation and to permit the return of said member during the next partial rotation.

4. Power-mechanism comprising: a power-roller; a cam-actuated member; a cam, rotatably supported thereby, adapted to co-operate with the power-roller but normally disengaged therefrom, the cam having a periphery formed to provide first a rise, then a recess, then a second rise and, finally, a fall; controlling means for engaging the cam with the roller and for arresting its movement either when at the beginning of its first said rise or at the point where said recess is presented toward the roller; and means for holding the cam-actuated member retracted when the cam is in the latter arrested position.

5. Power-mechanism, as in claim 4, in

which said means for holding the cam-actuated member retracted is in the form of a latch, and the latch and the cam-actuated member are provided with co-operative abutments whereby the latch is tripped in consequence of the movement of said member resulting from the second rise of the cam.

6. Power-mechanism comprising: a power-roller; a cam co-operative therewith; a cam-actuated member on which the cam is mounted; a part to be moved, connected with the cam actuated member, said part having a bias toward normal position; a manually operable key; and cam-controlling means controlled by said key and arranged to engage the cam with the roller and to arrest its movement twice in each full rotation; the cam having a smooth rising portion to move said part from normal position during one part-rotation of the cam, and a smooth falling portion to control the return of said part to normal position during the second part-rotation of the cam.

7. In a typewriter or the like, power-mechanism comprising: a power-driven roller, a cam cooperable therewith and having two rising portions and two intermediate dwell portions; connections between said cam and a part to be actuated thereby; spring-controlled means tending to rotate the cam into engagement with the roller; and manually-operable controlling means, for the cam, comprising a part having a single abutment and movable, in opposite directions, into two definite positions; the cam being provided with two stop-lugs arranged to cooperate alternately with said abutment in the two respective positions of said part, to arrest the cam with its dwell portions successively adjacent to the roller.

8. Power-mechanism, for a typewriter or the like, comprising a cam provided with a plurality of operative lobes and with intermediate dwell portions; a power-driven roller cooperable with the cam; and manually-operable control mechanism for the cam, constructed and arranged to cause engagement of the cam with the roller, when a manually-operated part is moved in one direc-

tion, and arrest of the cam at one of its dwell points; and to cause similar engagement and arrest at the next succeeding dwell point, when the manually-operated part is moved in the opposite direction.

9. In a typewriter or the like, the combination, with a part to be moved, having a bias toward a normal position, and with a manually-operable member, of a lock for retaining said part in a position to which it has been moved in opposition to said bias; and power-actuated mechanism, controlled by said manually-operable member and arranged to operate at each movement thereof in each direction, said mechanism acting alternately, at successive operations, to move said part from normal position into locked position, and to release said lock and permit return of said part to normal position.

10. Power-mechanism comprising: a power-driven roller; a cam, cooperative with said roller, having a plurality of lobes and intermediate dwell-points; means tending to rotate the cam into engagement with the roller; and means, for controlling such rotation, comprising detents, on the cam, corresponding in number to the lobes thereof and located alternately at greater and lesser distances from the axis of rotation of the cam, and a relatively stationary stop cooperative with said detents and movable alternatively into the two paths of movement of the detents, whereby successive movements of the stop in opposite directions causes successive releases of the cam and successive rotations thereof through the space of one lobe.

11. In a typewriter or the like, the combination, with a part to be moved, and a manually-operable key, of a power-driven mechanism operable intermittently; means, controlled by said key, for throwing the power-mechanism into operation at each depression and again at each return of the key; and connections, between the power-mechanism and said part, for controlling movements of said part in opposite directions at successive operations of the power mechanism.

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