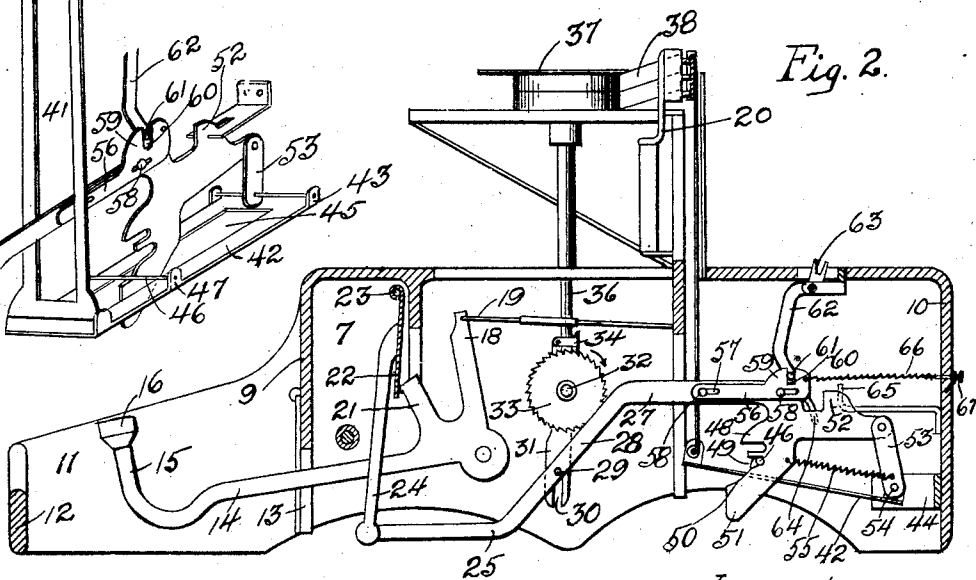
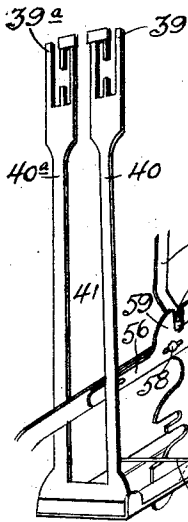
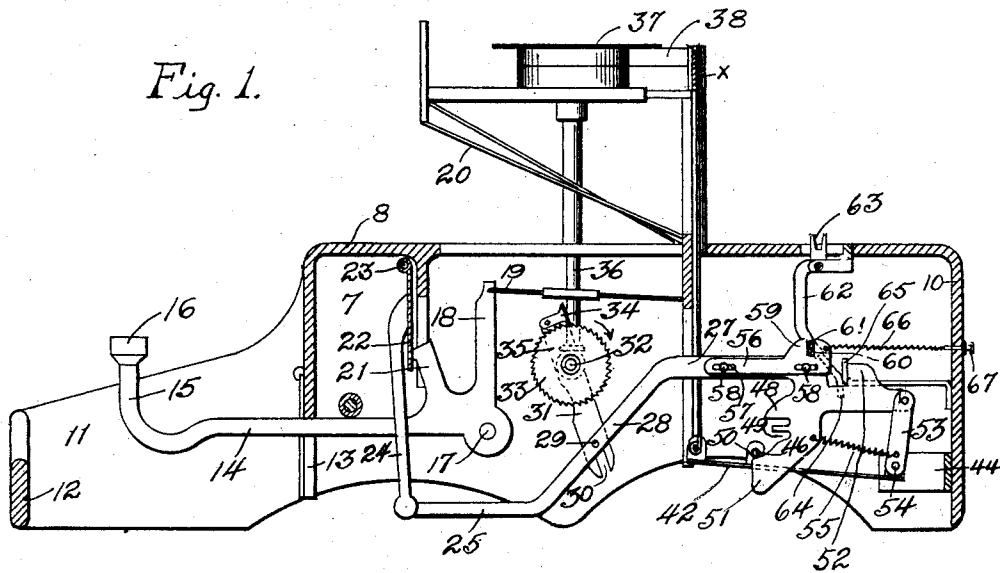


O. EGGBRECHT.
ESCAPEMENT MECHANISM.
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UNITED STATES PATENT OFFICE.

OTTO EGGBRECHT, OF MOMENCE, ILLINOIS, ASSIGNOR TO THE EMERSON TYPEWRITER COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

ESCAPEMENT MECHANISM.

969,530.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, OTTO EGGBRECHT, a citizen of the United States, residing at Momence, in the county of Kankakee and State of Illinois, have invented certain new and useful Improvements in Escapement Mechanism, of which the following is a specification.

The typewriter of the present invention employs a universal bar adapted to be actuated by the depression of any key, the movement of which bar serves, through suitable connections, to actuate the ribbon lift and also the escapement dogs.

The object of the present invention is to so construct the operating devices, which are actuated by the universal bar, that the ribbon will be completely lifted prior to the actuating of the carriage escapement, which allows the key lever to act freely at the beginning of the stroke and throws the pressure of the escapement action onto the key lever at the end of the stroke at a time when the type bar has acquired sufficient momentum to accommodate the additional load thrown onto the type bar. The result of this arrangement is to ease the stroke of the keys very materially, and at the same time permit the escapement to be actuated by a very slight movement at the end of the key lever stroke.

Another object of the invention is to actuate the escapement mechanism directly from the movements of a member carried by the draw bar, and to so arrange the connection between this member and the draw bar that the member will be moved at the end of the stroke of the draw bar.

Further objects will appear from a detailed description of the invention, which consists in the features of construction and combination of parts hereinafter described and claimed.

In the drawings, Figure 1 is a longitudinal sectional elevation from front to rear of the typewriter, showing those portions of the mechanism which relate to the present invention, with a key lever in elevated position; Fig. 2, a similar view, showing the key lever depressed; and Fig. 3, a perspective detail of the ribbon lift.

The frame of the typewriter comprises side walls 7, a flat rectangular top wall 8, and front and rear walls 9 and 10, respectively.

The side walls are carried forward in the form of extensions 11, which are connected at their front ends by a front rail 12, which arrangement furnishes a space for the location of several banks of keys, only one key being shown in the present drawings. The front wall 9 is provided, in its lower edge, with a plurality of slots 13, one for each of a plurality of key levers 14, each of which, at its forward end 15, is upturned to receive a button 16 of the usual character. The key levers are all hinged to a transversely extending key lever rod 17, the ends of which are supported within the side walls of the frame. Each of the key levers is provided, at its inner end, with a vertically extending arm 18, from which extends a link 19, which serves to actuate a vertically pivoted type bar 20. When any key is depressed, its type bar will be swung to the center of the machine to a point marked X, which indicates the striking point on the writing line, but, in view of the fact that the present invention is not concerned with the construction of the type bar or its mode of operation, it is not deemed necessary to refer to these features in detail.

Each of the key levers is provided, immediately in front of the arm 18, with an upwardly extending prong 21, which prong engages a universal bar 22, which is hinged at its upper edge to a transversely extending rod 23, the arrangement being one whereby the free end of the universal bar will be swung forward with each depression of the key lever, as clearly indicated in Fig. 2. The universal bar has secured thereto a depending arm 24, which extends below the line of the key levers, and is pivoted at its lower end to a draw bar 25. The draw bar comprises a straight front section 26, and a straight rear section 27, parallel and offset with respect to one another, and connected by means of a diagonally extending intermediate section 28 carrying a laterally projecting pin 29. The pin 29 engages a slot 30 in the lower end of a dog arm 31, which is pivoted to a feed shaft 32, on which is rigidly mounted a ratchet wheel 33. The dog arm, at its upper end, carries a dog 34, which engages the teeth of the ratchet wheel and is adapted to impart intermittent rotation thereto in the direction of the arrow.

The feed shaft serves, by means of

beveled gearing 35, to impart rotation to a vertical feed shaft 36, which carries a ribbon feed wheel 37 adapted to impart horizontal movement to a ribbon 38, which ribbon is entered through guide prongs 39 and 39^a on the upper ends of the vertical arms 40 and 40^a of a ribbon holder 41, as shown in Fig. 3. The ribbon holder is pivoted at the forward end of a lift plate 42, the rear end of which is provided with upturned ears 43, pivoted between the ends of a bracket 44 secured to the rear wall of the frame. The lift plate is provided, in its center, with a slot 45, which is bridged by a cross rod 46, the ends of which are entered into ears 47 struck up from the side edges of the lift plate.

The rear section of the draw bar terminates in a depending head 48, provided in its front edge with a recess 49, the lower edge 50 of which is sloped or beveled, to provide a cam member 51 which engages the cross rod 46, with the result that, when the draw bar is drawn forward, the cam extension will ride under the cross rod 46 and raise the lift plate, thereby lifting the ribbon holder. The depending head terminates, at its rear end, in a prong 52, which is pivoted to a link 53, the lower end of which is mounted on a pivot rod 54, which also serves to pivot the rear end of the lift plate. In order to aid in returning the draw bar to its normal retracted position, a coil spring 55 is interposed between the depending head 48 and the lower end of the link 53, with the result that as the head is drawn forward the spring will be extended.

The rear section of the draw bar serves as a mounting for an escapement actuating member 56, which, as shown, is in the form of an elongated plate provided with slots 57 which receive headed pins 58. The plate, as shown, is formed with an upwardly extending portion 59, which is formed with a slot 60 adapted to receive a stud or pin 61 projecting from a swinging arm 62, which carries the escapement mechanism 63. The arm 62 extends downwardly, and has its lower portion 64 normally contacting a stop 55, which projects out from the rear wall of the frame; and attached to the rear of the upwardly extending portion 59 is a spring 66, secured to an adjusting screw 67 entered into the rear wall of the frame, the spring 66 serving to return the member 56 to normal position upon the return stroke of the key levers.

It is not deemed necessary to show the rack and platen of the machine, since the present invention is not concerned with the details of this mechanism.

In operation, the depression of any key will swing forward the universal bar simultaneously with the swing of the type bar, and this forward movement of the uni-

versal bar will cause a forward movement of the draw bar 25, which will actuate the dog 34 and impart a feeding movement to the ribbon. The same movement of the draw bar will cause the cam surface 50 of the cam extension 51 to ride under the cross rod 46 of the lift plate, so that the ribbon will be lifted at the beginning of the printing stroke and will be fully raised prior to the final completion of the stroke and prior to the escapement. At the end of the stroke, the releasing device 56 will be drawn forward, putting the draw bar under increased tension at the very completion of the stroke and at a time when the type bar has acquired its greatest momentum toward the completion of its swing, so that the additional pressure necessary to be exerted on the keys, in order to effect the escapement, will hardly be noticed by the operator, as would be the case if the actuation of the escapement devices were effected earlier in the stroke.

As shown in Fig. 1, when the escapement mechanism is in normal position, the member for actuating the escapement mechanism will be held in position, so that the headed pin will lie midway of the slot 57; hence the initial movement of the draw bar to operate the ribbon feed and ribbon lifting mechanism will impart no movement to the escapement actuating member, but, after the draw bar has traveled a sufficient distance to bring the pins into engagement with the ends of the slot 57, movement will be imparted to the escapement actuating member, and this movement of the member will act directly to actuate the escapement mechanism 63, and, as will be seen, this movement will occur toward the end of the stroke of the key lever and the end of the movement of the draw bar, and as, at this time, the type bar will have acquired its greatest momentum, the additional pressure on the key lever necessary to operate the escapement mechanism will not be noticed by the operator.

It will be seen from the foregoing description that the arrangement is one which relieves the keys in large measure from the pressure necessary to actuate the escapement dogs, so that the action of the machine will be correspondingly lightened.

I claim:

1. In ribbon lift and escapement mechanism, the combination of key levers and keys, a universal bar adapted to be actuated by the depression of a key, escapement devices and ribbon lift devices, a draw bar, actuated by the universal bar and acting directly upon the ribbon lift devices, a member for actuating the escapement devices held in constant operative engagement therewith, said member being connected to the draw bar and actuated by a partial movement of

the key lever, and a stop member for maintaining the escapement mechanism in normal position, substantially as described.

2. In ribbon lift and escapement mechanism, the combination of key levers and keys, a universal bar adapted to be actuated by the depression of a key, a pivoted escapement dog, an arm depending from the dog, a draw bar connected with and rearwardly extending from the universal bar, a member carried by the draw bar for actuating the ribbon lift at the beginning of a printing stroke, and an actuating member for the escapement mechanism, slidably mounted on the draw bar and in constant contact with the depending arm, said escapement actuating member being operated to move the escapement dog toward the end of the movement of the draw bar, substantially as described.

3. In ribbon lift and escapement mechanism, the combination of key levers and keys, a universal bar adapted to be actuated by the depression of a key, a pivoted escapement dog, an arm depending from the dog, a draw bar connected with and extending rearwardly from the universal bar, a member carried by the draw bar for actuating the ribbon lift at the beginning of a printing stroke, an actuating member for the escapement mechanism, slidably mounted on the draw bar and in constant contact with the depending arm, said escapement actuating member being operated to move the escapement dog toward the end of the movement of the draw bar, and a stop member against which a portion of the escapement mechanism normally rests, substantially as described.

4. In ribbon lift and escapement mechanism, the combination of key levers and keys, a universal bar adapted to be actuated by the depression of a key, a draw bar connected with the universal bar, and provided with a depending head furnishing a cam member, a ribbon lift plate adapted to be elevated by a movement of the cam, an escapement dog, an actuating member for the escapement dog, carried by and slidably mounted on the draw bar, said escapement actuating member being in constant engagement with said draw bar and imparting movement directly to said escapement dog, said draw bar imparting motion to said escapement actuating member toward the end of the printing stroke, substantially as described.

5. In ribbon lift and escapement mechanism, the combination of key levers and keys, a universal bar adapted to be actuated by the depression of a key, escapement devices and ribbon lift devices, a draw bar, actuated by the universal bar and acting directly upon the ribbon lift devices, a non-resilient member for actuating the escapement de-

vices, and held in constant operative engagement therewith, and a lost motion connection between the escapement actuating member and the draw bar, substantially as described.

6. In ribbon lift and escapement mechanism, the combination of key levers and keys, a universal bar adapted to be actuated by the depression of a key, escapement devices and ribbon lift device, a draw bar, actuated by the universal bar and acting directly upon the ribbon lift devices, a non-resilient member for actuating the escapement devices, and held in constant operative engagement therewith, a lost motion connection between the escapement actuating member and the draw bar, and means for returning the escapement actuating member to normal position, substantially as described.

7. In ribbon lift and escapement mechanism, the combination of key levers and keys, a universal bar adapted to be actuated by the depression of a key, escapement devices and ribbon lift devices, a draw bar, actuated by the universal bar and acting directly upon the ribbon lift devices, a non-resilient member for actuating the escapement devices, and held in constant operative engagement therewith, a lost motion connection between the escapement actuating member and the draw bar, and a stop member against which a portion of the escapement mechanism normally rests, substantially as described.

8. In mechanism of the class described, the combination of key levers and keys, a universal bar adapted to be actuated by the depression of a key, escapement devices, a member for actuating the escapement devices, having a slot therein, a draw bar connected with the universal bar, a pin carried by the draw bar and lying within the slot in the escapement actuating device, the pin contacting the end of the slot and moving the escapement actuating mechanism toward the end of the movement of the draw bar, substantially as described.

9. In mechanism of the class described, the combination of key levers and keys, a universal bar adapted to be actuated by the depression of a key, escapement devices, a member for actuating the escapement devices, having a slot therein, a draw bar connected with the universal bar, a pin carried by the draw bar and lying within the slot in the escapement actuating device, the pin contacting the end of the slot and moving the escapement actuating mechanism toward the end of the movement of the draw bar, and means for returning the escapement operating member to normal position, substantially as described.

10. In mechanism of the class described, the combination of key levers and keys, a universal bar adapted to be actuated by the depression of a key, escapement devices, a

member for actuating the escapement de-
vices, having a slot therein, a draw bar con-
nected with the universal bar, a pin carried
by the draw bar and lying within the slot
5 in the escapement actuating mechanism, the
pin contacting the end of the slot and mov-
ing the escapement actuating mechanism to-
ward the end of the movement of the draw

bar and a stop member against which a por-
tion of the escapement mechanism normally 10
rests, substantially as described.

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