T. E. BUSCHMANN.

RIBBON MECHANISM FOR TYPE WRITING MACHINES.

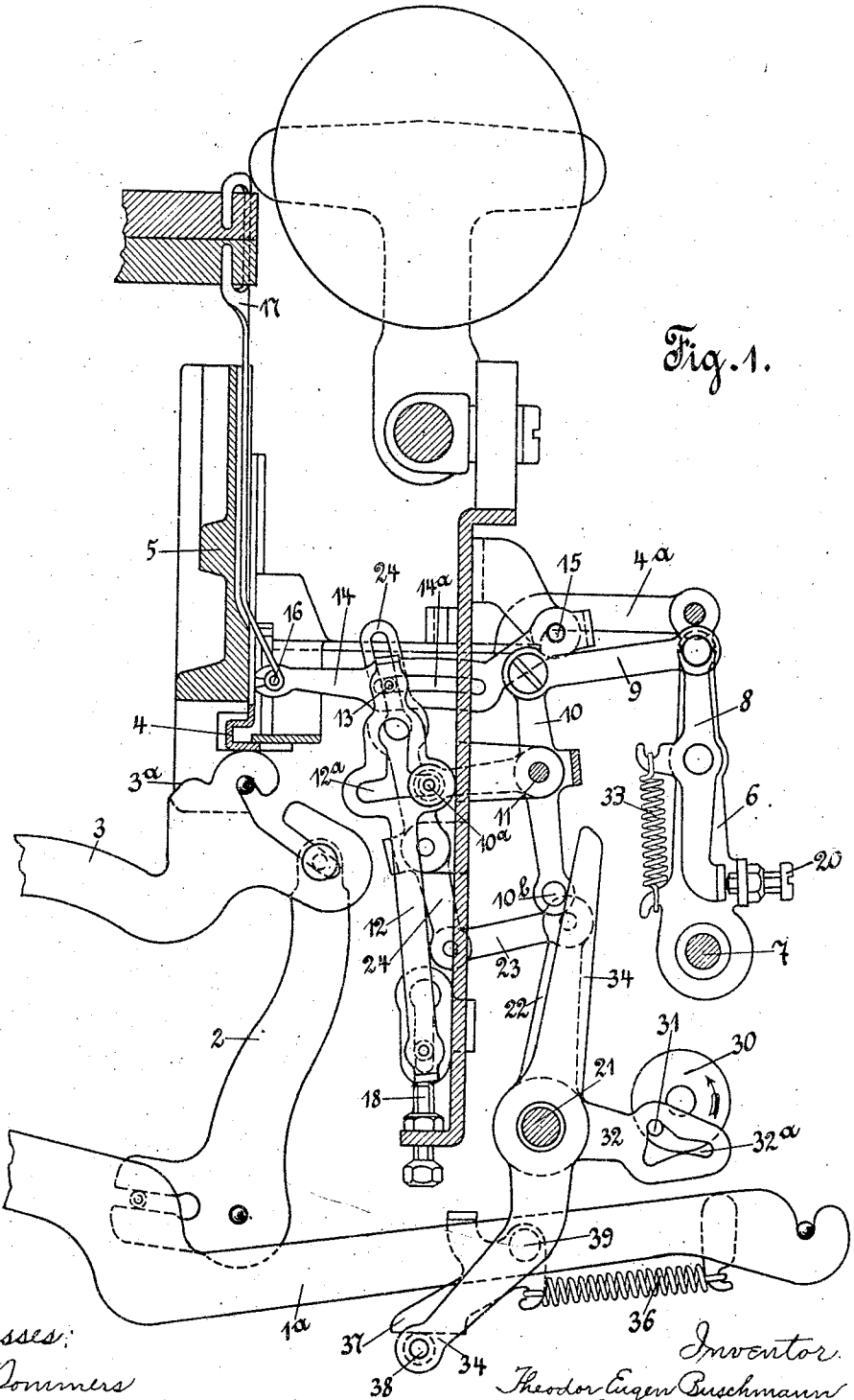
APPLICATION FILED NOV. 22, 1913.

1,165,941.

Patented Dec. 28, 1915.

3 SHEETS—SHEET 1.

Fig. 1.



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3 SHEETS—SHEET 2.

Fig. 2.

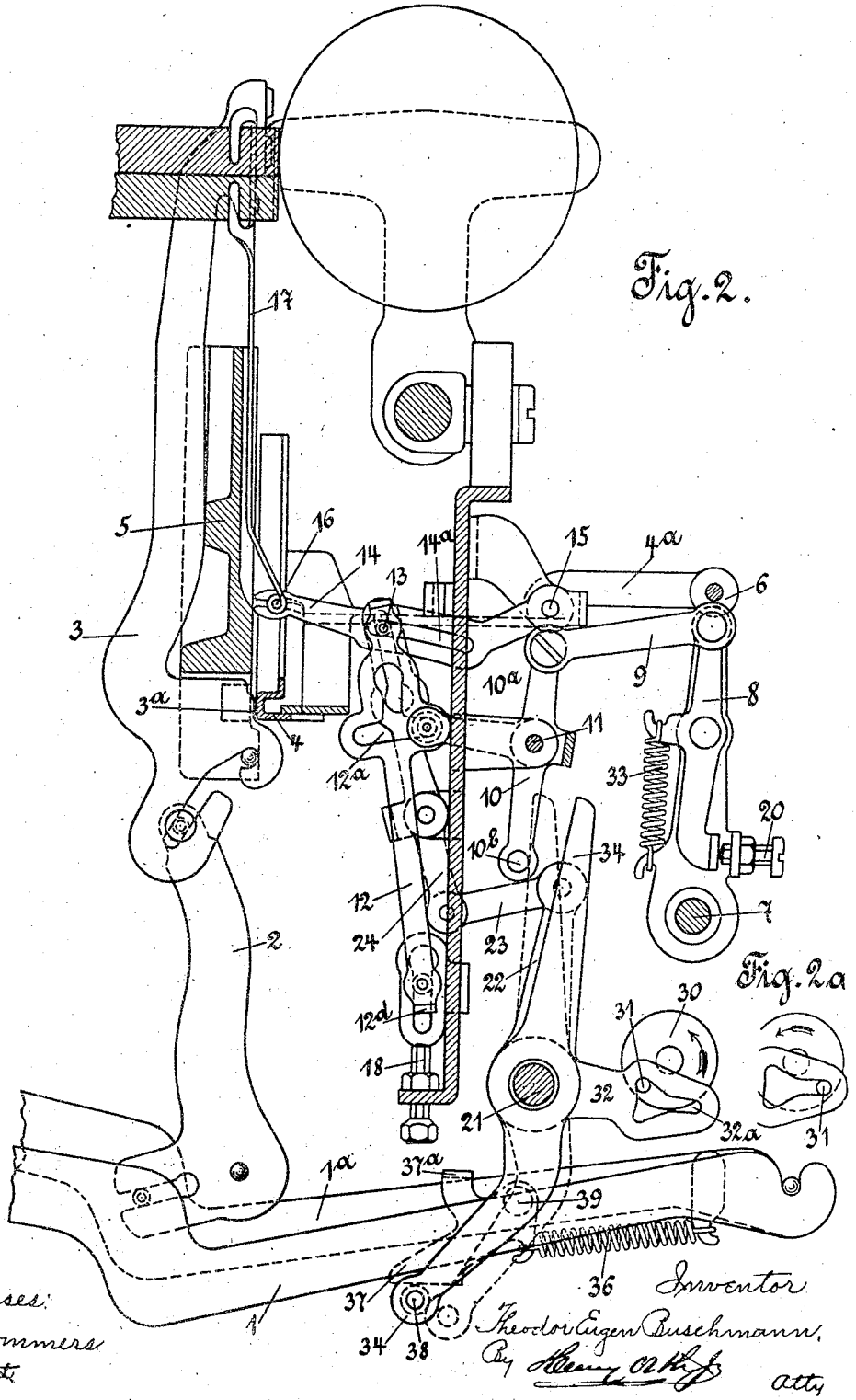


Fig. 2a

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3 SHEETS—SHEET 3.

Fig. 4.

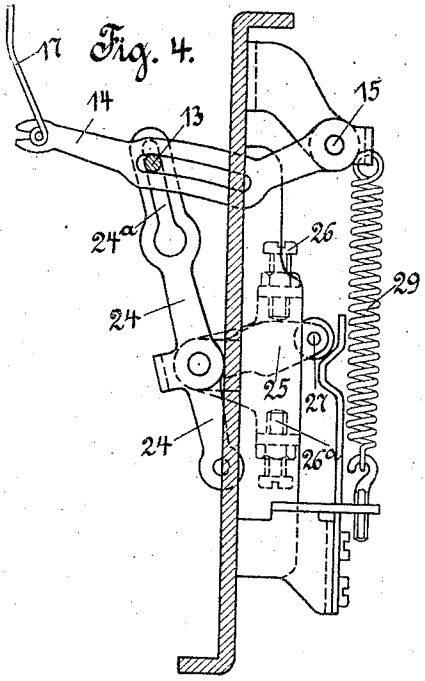


Fig. 3.

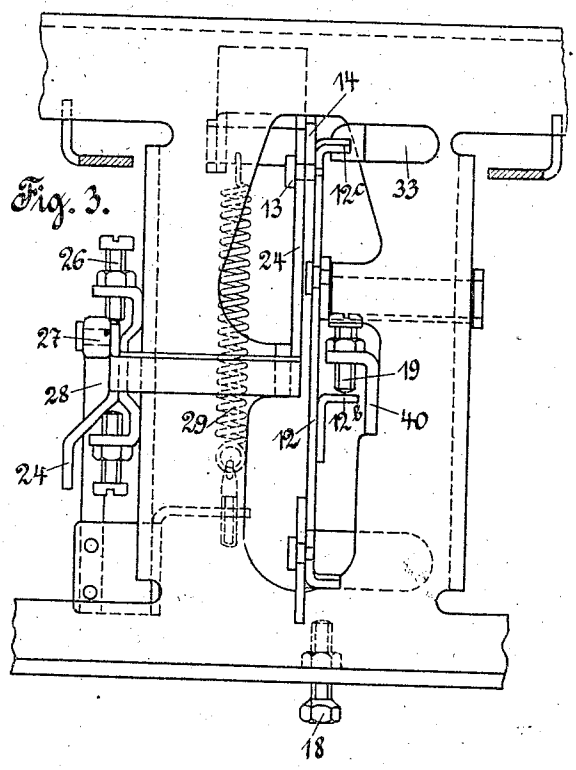


Fig. 5.

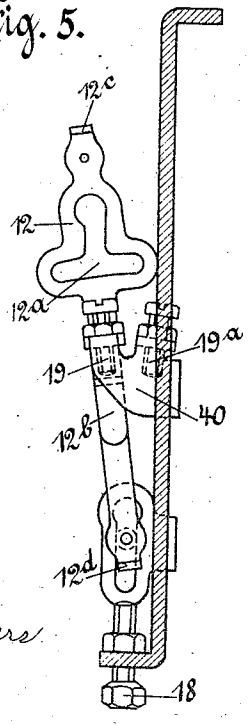
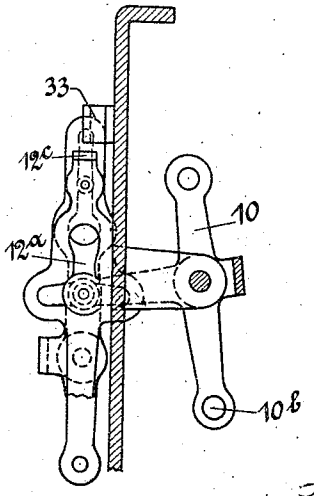


Fig. 6.



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UNITED STATES PATENT OFFICE.

THEODOR EUGEN BUSCHMANN, OF CHEMNITZ, GERMANY, ASSIGNOR TO THE FIRM OF WANDERER WERKE VORM. WINKLHOFER & JAENICKE AKT.-GES., OF SCHÖNAU, NEAR CHEMNITZ, GERMANY.

RIBBON MECHANISM FOR TYPE-WRITING MACHINES.

1,165,941. Specification of Letters Patent. Patented Dec. 28, 1915.

Application filed November 22, 1913. Serial No. 802,576.

To all whom it may concern:

Be it known that I, THEODOR EUGEN BUSCHMANN, a subject of the Emperor of Germany, residing at Chemnitz, Saxony, Germany, have invented a certain new and useful Improved Ribbon Mecha ism for Type-Writing Machines, of which the following is a specification.

This invention relates to mechanism for moving the ink-ribbon guide of typewriting machines, in which the stroke of the ink-ribbon guide may be altered, if typing is required in two different colors or the ink-ribbon guide is to be put out of action for waxed paper stenciling. In mechanism of this description, an arrangement is also required to cause the ink-ribbon guide to be adjusted into the black or red zone of the ink-ribbon, when typing accents by means of the so-called dead keys. For this purpose, the ink-ribbon guide, for typing ordinary letters as well as for typing accents is operated by the same driving member, which, on the one hand, for typing ordinary letters, receives its movement from the universal bar, but on the other hand however for typing accents, it is brought into action by means of a transmission member operated by the accent keys itself.

The invention is illustrated by way of example in the accompanying drawings, in which—

Figure 1 is a side elevation of the mechanism for moving the ink-ribbon guide, in its normal position, Fig. 2 is a corresponding elevation in the working position, Fig. 2ª is a detail view showing the position of some of the parts when the ribbon vibrator is in inoperative position. Fig. 3 is a front view of a part of the mechanism according to the invention, corresponding to Fig. 2, Fig. 4 is a detail of the ink-ribbon guide lever with adjustment and balancing apparatus, Figs. 5 and 6 are details in side elevation.

The key lever 1, by means of the intermediate lever 2, moves the type lever 3 in the known manner against the platen and thus causes the type to print. On moving the type lever 3, it presses with a cam or shoulder 3ª the segment-shaped universal bar 4 backward (to the right in Figs. 1 and 2). The universal bar 4 is guided in a corresponding cavity in the type lever support 5 and linked by means of a stirrup 4ª to a guiding lever 6, which is pivotally mounted on the axle 7, for the purpose of guiding the universal bar almost parallel.

An intermediate member 8 formed as a rocking lever, is movably arranged on the guide lever 6, one end of said intermediate member being held against an adjusting screw 20 by means of a tension spring 33 and the other end is connected by means of a link 9 with a three-armed lever 10, which latter is pivotally mounted on the shift frame. An arm of this three-armed lever 10, which is rotatable about the axle 11, engages with a pin 10ª in an almost T-shaped slot 12ª of a lifting bar or vibrator 12, which in its turn engages in a longitudinal slot 14ª of the ribbon-guide lever 14 by means of a pin 13. The said ribbon-guide lever pivots about a pin 15, which is mounted in a bearing on the shift frame, the ribbon guide 17 being by this means lifted upward until the ribbon reaches its printing position.

In the low position according to Fig. 1, the lifting bar 12 is limited or adjusted by means of a stop 18 movably arranged on the shift frame. For the upper movement of the ribbon, for black and red printing, the lifting bar 12 is limited in its lifting movement by an angle stop 12ᵇ, which acts against adjusting screws 19 and 19ª, which latter are arranged in a bearing arm 40 of the shift frame (Figs. 3 and 5).

An arm 22 is secured on the rotatable axle 21 and is connected by means of the link 23 with an adjusting lever 24. The pin 13 of the ribbon guide lever 12 is guided in the slot 24ª of this adjusting lever 24 (Fig. 4), which is further provided with an offset arm 25 limited in its movement by two stops 26, 26ª (Fig. 4), which are adjustable in order to regulate the lift of the ribbon guide. Further, the offset arm 25 is provided with a roller 27, which coöperates with a plate spring 28 and secures the offset 25 in both of its end positions. The weight of the ribbon guide 17 as well as the ribbon guide lever 14 is counter-balanced by means of a tension spring 29 in order to obtain a lighter stroke.

In order to put the stroke of the ribbon guide out of action, when stenciling with waxed paper, a rotary disk 30 is arranged on the side wall of the frame of the machine, and a pin 31 provided on said disk 30 en-

gages in a curved slot 32^a of an arm 32, which latter is rigidly connected with the arm 22.

When accents are to be typed, it will be obvious that the universal bar should not be operated and such a result is secured by not providing the type lever 3 corresponding to an accent, with a cam surface 3^a.

In order to obtain a lifting movement of the ribbon guide and also of the ribbon itself, in this case, a two-armed lever 34 is rotatably arranged on the axle 21, against the lower end of which is adapted to act a shoe 37 rotatably mounted on the pin 39 on the key lever 1^a. The shoe 37 is yieldingly maintained in position by means of a tension spring 36, to counter-balance alterations or deviations in the lifting movement of the dead or accent key levers. The resilient shoe 37, which is provided for each accent key is provided with a bent part 37^a, which overlaps its key lever, and the sole of the shoe rests on a rod or special bar 38 secured to the lower arm of the lever 34, under the action of the spring 36. The rod 38 extends beneath all the accent key levers and at the other end is also secured to a lever, similar to the lower arm of the lever 34 and is rotatably mounted on the axle 21, so that a stirrup is formed, which is pivotally mounted on the axle 21. The upper arm of the lever 34 rests against the pin 10^b of the three-armed lever 10 or actuating lever for the vibrator and can transmit movement to same.

The operation of the mechanism is as follows: If letters are to be typed in black in the usual manner, then the mechanism, before commencing to type, assumes the position shown in Fig. 1. When a key is struck, the cam surface 3^a of the type lever 3 presses the universal bar 4 together with its stirrup 4^a backward. The guiding lever 6 receives herewith a rocking movement, which by means of the lever 8 and the link 9 it transfers to the three-armed lever 10. The lifting bar 12 is thereby brought into the position shown in Fig. 2 and with the help of the pin 13 and the ribbon guide lever 14, the ribbon guide 17 together with the ribbon itself is lifted into the black printing position. The adjusting of the height of the ribbon in the normal position with relation to the printing line, is performed by adjusting the screw 20, with the help of which the initial position of the ribbon guide lever 14 may be altered by means of the two-armed rocking lever 8, the link 9, the three-armed driving lever 10 and the lifting bar 12.

If typing in red is to be effected, the axle 21 is rotated by means of a known apparatus not shown on the drawings. The arm 22 is thereupon actuated (to the left in Figs. 1 and 2) and rocks the two-armed adjusting lever 24 on its fulcrum to the right until the pin 13 is so placed in the slot 14^a of the ribbon guide lever 14, that this lever 14 will perform a greater movement about its point of rotation 15, that is, it lifts the ribbon higher, until it reaches the red printing position. In both cases, when printing in black as well as when printing in red, the stroke of the rod 12 and therewith also the remaining part of the ribbon lifting apparatus is limited by the adjustable stops 19 and 19^a.

For stenciling with waxed paper, the disk 30 is rotated in the direction of the arrow from the position according to Fig. 2 into the position shown in Fig. 2^a, thus lifting the arm 32 by means of the pin 31 and thereby rocking the arm 22 to the left in such a manner that the adjusting lever 24 and the lifting bar 12 reach the position shown in Fig. 6, in which position, the pin 10^a of the three-armed lever 10 will slide without any useful effect in the vertical part of the slot 12^a, so that the lifting bar 12 remains stationary. If the lifting bar 12 should, however, make a small lifting movement, on account of lateral friction, or of inaccurate adjustment into the idle middle position, then the bent part 12^c of the lifting bar 12 is caught by the stop 33 (Figs. 3 and 6) and its further movement prevented. When the lifting bar 12 is situated in the position according to Fig. 6 for stenciling with waxed paper, care must be taken that said lifting bar 12, in the normal position of the ribbon guide lever, does not sink down so far that the pin 10^a of the driving lever 10 enters into the vertical step of the T-shaped slot 12^a, because otherwise the lifting bar 12 cannot be again guided back into the position for red and black typing. For this purpose the bent part 12^d of the lifting bar 12 acts against the correspondingly adjusted screw 18.

It is possible that it may be required to change from the red type position as well as from the black type position of the ribbon for stenciling with waxed paper. In order to bring the ribbon levers immediately into the black type position after stenciling with waxed paper, the apparatus acts, according to this invention, in the following manner. If by rotating the shaft 21 the ribbon levers are placed in the red type position, the arm 32 moves slightly upward, so that the pin 31 of the disk 30 passes into the left lower angle of the curved slot 32^c. If the disk 30, while in this position, is turned in the direction of the arrow, then its pin 31 also passes into the right extension of the curved slot 32^a, so that it is therefore of no importance whether the levers are transferred from the red or black type position into the position for stenciling with waxed paper. After finishing stenciling with waxed paper, the disk

30 is rotated in the opposite direction to that indicated by the arrow and, on account of the shape of the curved slot 32^a, the pin 31 will be compelled to enter into the left upper angle of the curved slot, this position corresponding to the black type position of the ribbon levers.

When typing accents, the accent key 1^a, under the influence of the shoe 37 which is yieldable against the action of the spring 36, turns the two-armed lever 34 about its axle 21, the upper arm of this lever then moving to the left toward the pin 10^b of the driving lever 10, thereby imparting to the latter the necessary rocking movement for actuating the ribbon guide. This movement of the three-armed driving lever 10, which is not dependent on the universal bar 4 is rendered possible by the two-armed lever 8 being able to swing out against the action of the spring 35 in a clockwise direction, when the three-armed driving lever 10 connected with said lever 8 by means of the link 9, moves in the same directions.

I claim—

1. In a typewriting machine, a pivoted ribbon guide lever, a vibrator having a variable point of connection with said lever, a pivoted adjusting lever to vary the point of connection between said vibrator and guide lever, an actuating lever for the vibrator having a fixed pivot and means to move the vibrator into inoperative position with respect to its actuating lever.

2. In a type-writing machine, the combination with a ribbon vibrating mechanism and means to shift the vibrating mechanism to cause the vibrations of the ribbon to be operative with respect to one or the other fields of a bi-chrome ribbon; of a universal bar, type bars having means to actuate said bar, accent key bars inoperative with respect to the universal bar, key levers and connections for actuating said bars, accent key lever actuated mechanism to operate the ribbon vibrating mechanism and means to move said ribbon vibrating mechanism to inoperative position and simultaneously render the accent key lever actuated mechanism inoperative.

3. In a typewriting machine, a ribbon vibrating mechanism including a vibrator, means to position the vibrator to vary its amplitude of vibration and also to render it inoperative, an accent key lever, accent-key-lever-actuated mechanism to actuate the vibrating mechanism and means to render said accent-key-lever actuated mechanism inoperative and simultaneously place the vibrator in inoperative position.

4. In a typewriting machine, a series of type levers, a universal bar actuated thereby, special type levers, a ribbon vibrator actuated by said bar but capable of independent operation, special key levers to actuate said special type levers, a bar common to all the special key levers, devices actuated by the latter bar to actuate the vibrator and mechanism to move the vibrator into inactive position with respect to said type levers and with respect to said devices, said mechanism also serving to change the amplitude of vibration of the vibrator.

5. In a typewriting machine, a universal bar, a rock-shaft actuated therefrom, a ribbon guide, a ribbon guide lever connected therewith, a vibrator having a pin and slot connection with said lever, a three-armed driving lever, yielding connections between said lever and rock-shaft permitting relative movement with respect thereto, a vibrating guide having a pin and slot connection with the vibrator, means to position said vibrator guide and thereby govern the position of the vibrator to vary the amplitude of movement of the vibrator or render the vibrator inoperative, a special bar, special key levers to operate said bar and means actuated by said bar to actuate said driving lever independently of the universal bar.

6. In a typewriting machine, a universal bar, a rock shaft actuated therefrom, a ribbon guide, a ribbon guide lever connected therewith, a vibrator having a T-shaped slot, and a pin and slot connection with said lever, a three-armed driving lever, a pin on one of its arms entering said T-shaped slot, yielding adjustable connecting means between said rock-shaft and driving lever whereby the ribbon guide is vertically adjusted, a pivoted vibrator guide having a pin and slot connection with the vibrator, devices to rotate said vibrator guide and thereby vary the amplitude of movement of the ribbon guide lever, and means to independently move said devices to render the vibrator inoperative.

7. In a typewriting machine, a universal bar, a rock-shaft actuated therefrom, a ribbon guide, a ribbon guide lever connected therewith, a vibrator having an inverted T-shaped slot and a pin and slot connection with said lever, a three-armed driving lever, a pin on one of its arms entering said T-shaped slot, adjustable yielding connecting means between said rock-shaft and driving lever, a pivoted vibrator guide having a pin and slot connection with the vibrator, devices to rotate said vibrator guide and thereby swing the vibrator with respect to the pin in its T-shaped slot, coöperating adjusting stops to positively limit the upward and downward movements of the vibrator, and a stop to prevent the movements of the vibrator when in its inoperative position.

8. In a typewriting machine, a universal bar, a rock-shaft actuated therefrom, a ribbon guide, a ribbon guide lever connected therewith, a vibrator having a pin and slot

connection with said lever, a three-armed driving lever having a pin and slot connection with the vibrator, adjustable yielding connecting means between said rock-shaft and driving lever, a pivoted vibrator guide having a pin and slot connection with the vibrator, devices to rotate said vibrator guide, yielding means to hold said vibrator guide in its end positions, and adjustable stops for said vibrator guide to adjust its end positions.

In testimony whereof I have affixed my signature.

THEODOR EUGEN BUSCHMANN.

In the presence of—
E. KILBOURNE FOOTE,
MARTHA ROTHE.