

F. C. URSBRUCK.
TYPE WRITING MACHINE.
APPLICATION FILED NOV. 10, 1910.

1,058,678.

Patented Apr. 8, 1913.

2 SHEETS-SHEET 1.

Fig. 1.

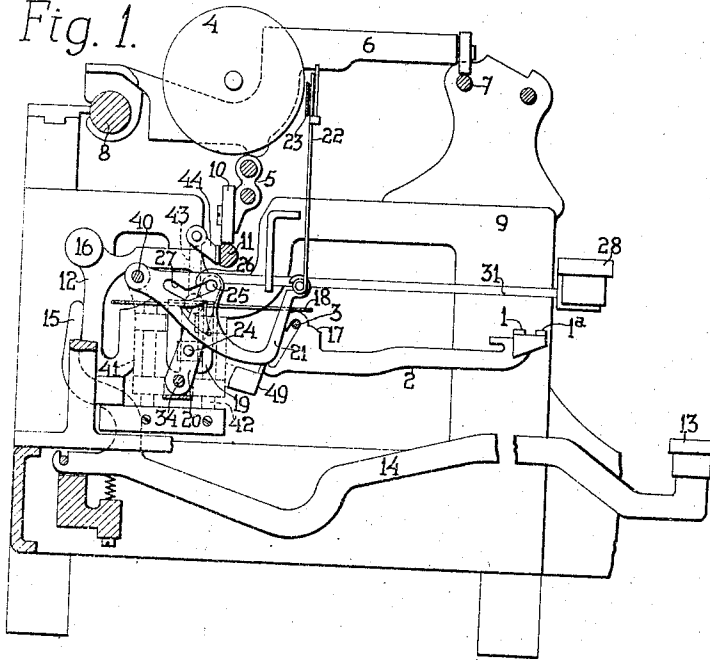


Fig. 2.

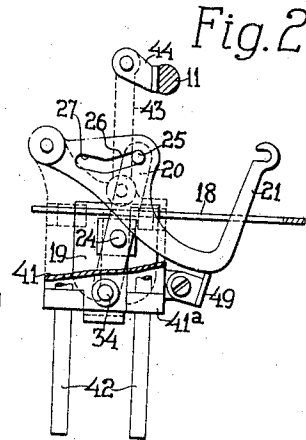


Fig. 3.

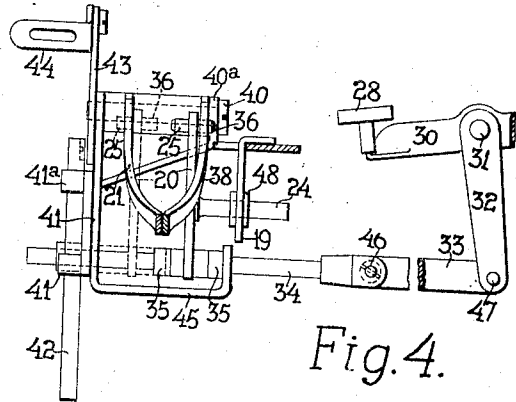
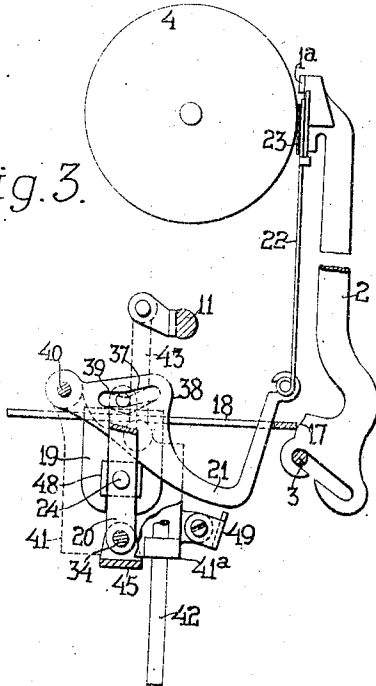


Fig. 4.

Witnesses.

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2 SHEETS—SHEET 2.

Fig. 5.

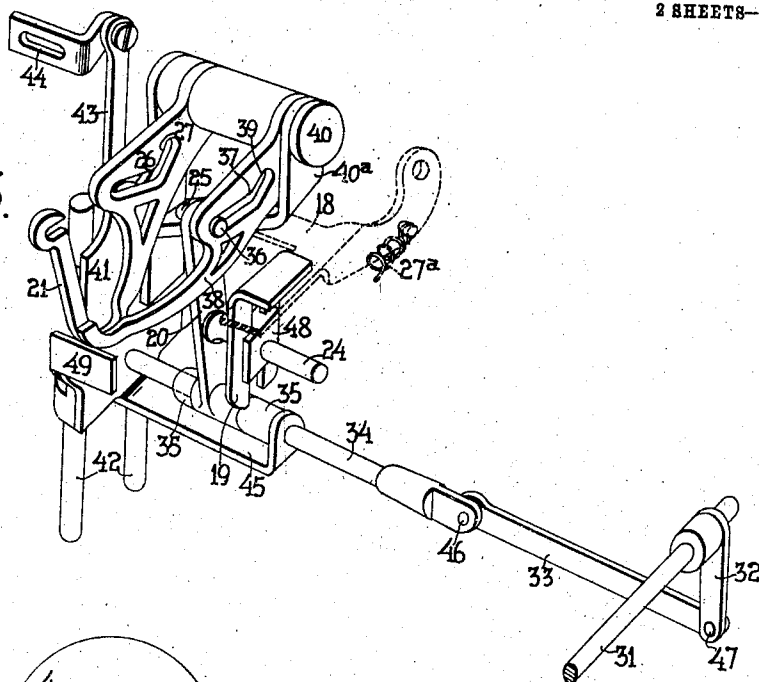


Fig. 6.

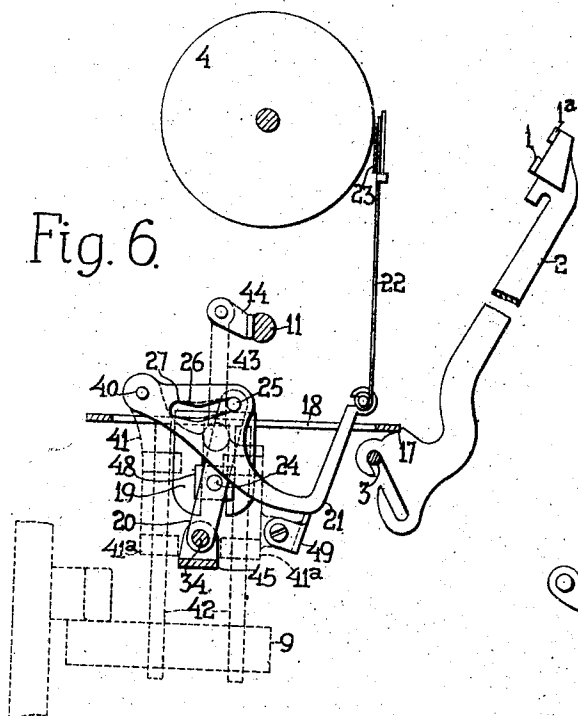
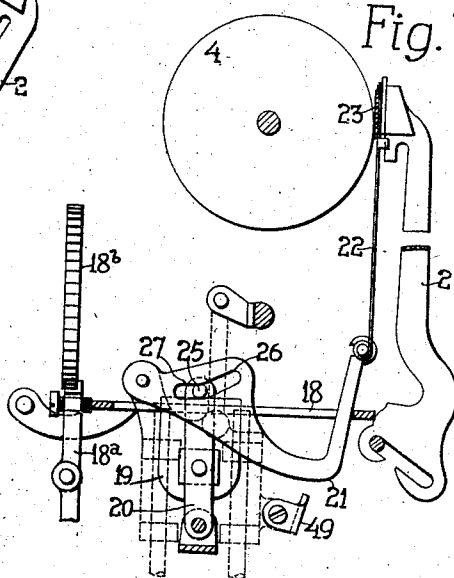


Fig. 7.



Witnesses.

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UNITED STATES PATENT OFFICE.

FRANK C. URSBRUCK, OF NEW YORK, N. Y., ASSIGNOR TO UNDERWOOD TYPEWRITER COMPANY, OF NEW YORK, N. Y., A CORPORATION OF DELAWARE.

TYPE-WRITING MACHINE.

1,058,678.

Specification of Letters Patent.

Patented Apr. 8, 1913.

Application filed November 10, 1910. Serial No. 591,539.

To all whom it may concern:

Be it known that I, FRANK C. URSBRUCK, a citizen of the United States, residing in New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Type-Writing Machines, of which the following is a specification.

This invention relates to devices for causing the ribbon to cover and uncover the printing point at each type stroke, in visible writing machines, and constitutes an improvement on the device disclosed in the application for United States Letters Patent of George E. Griffin, filed November 5, 1910, Serial No. 590,838. In said application, the ribbon is caused to cover the printing point prior to the impact of the type, where it is locked in position, during the completion of the printing stroke of the type bar. To effect these results, the operating arm connected to the ribbon carrier has a wrist engaged by a cam on a lever operated at each type stroke, to cause the ribbon to cover the printing point prior to the impact of the types. Further movement of the lever brings a dwell portion on said cam into engagement with the wrist on the moving operating arm, to lock or hold the ribbon in operative position.

According to the present improvements, in place of using a separate universal bar for vibrating the ribbon, I utilize, for this purpose, the same universal bar that commonly operates the carriage-feeding dogs in the typewriting machine; and I compensate for the usual short stroke of said universal bar (which is insufficient to make it practicable to get the required extent of movement of the cam-actuated ribbon-vibrating wrist) by introducing a movement-multiplying lever, which is itself operated by said universal bar and carries the ribbon-vibrating wrist at such a point that an extensive movement of the wrist accompanies the vibration of the lever. This movement is sufficient to enable the wrist to traverse the rather long cam, including the locking extension, at each stroke of the universal bar. A variable throw of the ribbon carrier, to enable either of two ribbon fields to be employed, is secured by forming a pair of dissimilar cams on a ribbon-vibrating arm, said cams respectively engaged by opposed wrists carried on or driven by the movement-multiplying lever,

which for this purpose is shiftable into engagement with either cam.

Another feature of the invention is a provision whereby the ribbon-vibrating mechanism is made vertically movable bodily, to shift with the platen, the ribbon mechanism being for this purpose mounted upon a support which moves with the shifting rail upon which the platen-frame usually runs. Furthermore, the entire ribbon-vibrating mechanism can be readily assembled as a unit and applied to or removed from the machine.

In the accompanying drawings, Figure 1 is a side view, showing one form of the invention applied to an Underwood writing machine, the mechanism being at rest. Fig. 2 is an enlarged detail side view, partly broken away, of the ribbon-vibrating mechanism in upper case position. Fig. 3 is a detail side view, showing the mechanism in operation, to cause the upper ribbon field to cover the printing point. Fig. 4 is a front view, partly in section, of the ribbon shifting mechanism. Fig. 5 is a perspective of the invention removed from the machine. Fig. 6 is a view similar to Fig. 3 showing the positions of the parts at the engagement of the type bar and universal bar, to vibrate the lower ribbon field to cover the printing point. Fig. 7 shows said ribbon field covering the printing point.

Lower and upper case types 1 and 1^a carried by type bars 2 pivoted at 3 strike a platen 4 on a platen frame 5. Said frame is mounted in a carriage 6 on the front and rear rails 7 and 8 of a framework 9. A roll 10 on the platen frame runs on a rail 11 forming part of the usual platen-shifting mechanism 12. Depressing a shift key 13 rocks a lever 14, having an arm 15 to swing the platen-shifting mechanism 12 on its pivot 16, thereby lifting the rail 11 and platen 4 to enable the upper case types 1^a to print. A ribbon carrier 22, having a ribbon 23 threaded therein, is supported by a ribbon-vibrating arm 21 pivoted at 40 and normally engaging a rest 49. As the types approach the platen, heels 17 on the bars 2 press backwardly a universal bar 18 to trip the usual carriage-feeding mechanism 18^a, 18^b (Fig. 7). The throw of said universal bar is usually very short, and in order to enable it to control the ribbon in the desired manner, I provide a movement-multi-

plying lever 20 between the universal bar and the ribbon carrier, said lever having between its ends a wrist 24 engaged by an actuator 19 on the universal bar. Said lever 20 also has near its free upper end a wrist 25, to engage a cam 26, on the carrier to raise the ribbon-carrier sufficiently to cause the lower field of the ribbon to cover the printing point, (Figs. 6 and 7) during the printing stroke and a short time prior to the impact of each type. Continued backward movement of the universal bar, as the type bar completes its initial stroke, causes said wrist 25 to engage a dwell portion 27 on the cam, to hold or lock the ribbon in effective position during continued movement of the universal bar and until the type finally strikes the platen. The dwell portion 27 is of sufficient extent to allow the actuator 19, under excessive pressure on the keys, to be thrown or sprung rearwardly past its usual stopping position. A spring 27^a returns the universal bar and lever to normal position with the ribbon upon releasing the key. Depressing either of keys 28 on a cross bar 30, fast on a rock-shaft 31, rocks an arm 32, which is connected by a link 33 with a rod 34. The lever 20 is journaled between two collars 35 on the rod, to shift axially therewith. Said lever also has a wrist 36, extending oppositely from wrist 25, to engage a cam 37 opposite the cam 26, and formed on a branch 38 of the ribbon-vibrating arm 21. Said cam 37 is of less height than the cam 26, and when the rod 34 is shifted to disengage the wrist 25 from its cam, and engage the wrist 36 with the opposite cam 37, the throw of the ribbon carrier is reduced, to cause the upper ribbon field to cover the printing point. The wrist 24 slides back and forth relatively to the actuator 19 as the lever 20 is shifted from side to side. The cam 37 terminates in a dwell portion 39 to maintain the upper ribbon field covering the printing point during the completion of each type stroke.

The entire ribbon vibrating mechanism is preferably shifted bodily with the platen, to cause the ribbon carrier 22 and its ribbon 23 to remain adjacent to the printing point as the platen is shifted. For this purpose, the ribbon vibrating arm 21 and its branch 38 may be pivoted at 40 to a vertically shiftable slide frame 41 having directors 41^a mounted on guides 42 on the framework 9, a link 43 connecting said slide with an ear 44 on the rail 11. The slide 41 moves vertically to maintain the proper relation between the ribbon vibrating mechanism and the shifting platen. The rest 49 is mounted on the slide to support the ribbon vibrating arm in either of its idle positions. A brace arm 40^a carried by the slide supports the outer end of the pivot 40 to hold it rigid.

The rod 34 is supported in the slide frame

41 and in an arm 45, the link 33 being pivoted at one end at 46 to the rod and at the other end at 47 to the arm 32, to enable the rod to shift with the platen. Also the actuator 19 is slotted to enable the wrist 24 of the lever 20 to shift relatively thereto, a slide-bearing 48 preferably being mounted in the slotted actuator and supported on the wrist, to afford a better connection between the wrist and actuator and minimize the wear.

In the present invention the advantages of a cam for positively controlling the ribbon throughout its vibration are obtained without sacrificing the advantage of having a short-movement universal bar which is operated by the type bars after they have acquired considerable momentum.

Having thus described my invention, I claim:

1. In a typewriting machine, the combination with a ribbon carrier, a platen shift, type-bars, and a universal bar vibrated by the type bars, of a movement-multiplying lever vibrated by a slide operatively connected to the universal bar and supported on the platen shift, and a ribbon vibrating arm having a cam engaged by the lever, said arm connected to the ribbon carrier to shift the ribbon to effective position.
2. In a typewriting machine, the combination with a ribbon carrier, type-bars, and a universal bar vibrated by the type bars, of a ribbon-vibrating arm having dissimilar cams, connected to the carrier, and a shiftable movement-multiplying lever connected with and supported independently of the universal bar to engage either cam.
3. In a typewriting machine, the combination with a ribbon carrier, type-bars, and a universal bar vibrated by the type bars, of a pivoted ribbon-vibrating arm having dissimilar cams, and connected to the ribbon carrier, a movement-multiplying arm having wrists to engage the respective cams, a shiftable support on which the lever is mounted, a finger-piece connected to said shiftable support, and a wrist on the lever having a sliding engagement with the universal bar.
4. In a typewriting machine, the combination with a ribbon carrier, a platen shift, a universal bar, and type-bars to operate the universal bar, of a movement multiplying lever pivoted on the platen shift and connecting the universal bar to the ribbon carrier and operated by a slide operatively connected to the former to vibrate the ribbon to cover the printing point prior to the impact of the types and hold said ribbon in use while the types strike the platen.
5. In a typewriting machine, the combination with a ribbon carrier, a platen shift, a universal bar, and type-bars to operate the universal bar, of a movement-multiplying

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bar, a lever pivoted to said vibrator, a second lever to swing said first lever, a driver for said second lever riding in a slot in said actuator, a shiftable platen, and a frame in which said levers are pivoted moving with said shiftable platen.

17. In a typewriting machine, the combination with a type bar and a universal bar struck by said type bar after it has acquired momentum in its swing, of a ribbon vibrator lever, a multiplying lever, a cam on the vibrator lever engaged by the multiplying lever to move the ribbon to cover the printing point during part of the type stroke, and to positively hold the ribbon at said point during the latter part of said type stroke.

18. In a typewriting machine, the combination with a type bar and a universal bar struck by said type bar after it has acquired momentum in its swing, of a ribbon vibrator, an actuator on said universal bar, a lever moved by said actuator, a second lever connected to said vibrator, a cam on said second lever, and a cooperating surface on said first lever to raise the ribbon on said vibrator to the printing point during part of the type stroke, and to hold it positively in said position during the latter part of the printing stroke.

19. In a typewriting machine, the combination with a universal bar, of an actuator on said universal bar, a shiftable platen, a slide in said actuator movable with the platen, and a ribbon vibrator constantly engaging said slide.

20. In a typewriting machine, the combination with a universal bar, of an actuator on said universal bar, a shiftable platen, a slide in said actuator moving with the platen, a vibrator having a cam slot, and a cooperating member moved by said slide as it works in said slot, and arranged to positively vibrate said vibrator with said universal bar and shift it with the shifting platen.

21. In a typewriting machine, the combination with a universal bar, of an actuator on said universal bar, a slide in said actuator, a platen shift, a ribbon mechanism engaging said slide, means for moving said mechanism with said shift, and a guide for said mechanism as it moves with the shift.

22. In a typewriting machine, the combination with a universal bar, of a vibrating lever, a ribbon carrier moved by said lever, a cam on said lever to raise one field of said ribbon to the printing point and positively hold it there, a second cam on said lever having a surface to throw another part of said ribbon to the printing point and positively hold it there, means for connecting either of said cams to the universal bar, and a rest for supporting said lever when free of each cam.

23. In a typewriting machine, the combination with a platen, a shiftable support therefor to shift the platen, a ribbon carrier, a lever to vibrate said carrier and a universal bar frame, of a rectilinearly guided support on which said lever is fulcrumed, means connecting said platen support with the lever support to shift said lever rectilinearly when the platen is shifted, and an actuator for said lever fixed on said frame and vibrating rectilinearly with the frame.

24. In a typewriting machine, the combination with a platen, a shiftable support therefor to shift the platen, a ribbon carrier, a lever to vibrate said carrier and a universal bar frame, of means for guiding the fulcrum to said lever rectilinearly, a link depending from said platen support to shift said lever when the platen is shifted, and an actuator for said lever fast on said frame vibrating rectilinearly with the frame.

25. In a typewriting machine, the combination with a platen, a shiftable support therefor to shift the platen, a ribbon carrier, a lever to vibrate said carrier and a universal bar frame, of a support for said lever, guides for said support to guide it rectilinearly, a link connecting said lever support with said platen support for shifting said lever rectilinearly when the platen is shifted, and an actuator on said frame.

26. In a typewriting machine, the combination with a platen, a shiftable support therefor to raise the platen, a ribbon carrier, a lever to vibrate said carrier and a universal bar frame, of a support for said lever, guides for said lever support to guide it vertically, a link connecting said lever support to said platen support for raising said lever vertically when the platen is raised, and an actuator on said frame.

27. In a typewriting machine, the combination with a platen, a shiftable support therefor to raise the platen, a ribbon carrier, a lever to vibrate said carrier and a universal bar frame, of a fulcrum for said lever adapted to be guided vertically, a link depending from said platen support connecting therewith for raising the lever vertically when the platen is raised, and an actuator on said frame.

28. In a typewriting machine, the combination with a shiftable platen, a ribbon carrier, a lever to vibrate said carrier and a universal bar frame, of a support, a fulcrum for said lever mounted on said support adapted to be guided rectilinearly to shift said lever rectilinearly when the platen is shifted, an arm on said lever support on which said lever rests when shifted for steadying the lever, and an actuator on said frame.

29. In a typewriting machine, the combination with a platen, a shiftable support

therefor to shift the platen, a ribbon carrier, a lever to vibrate said carrier and a universal bar frame, of a support for said lever, guides for said lever support to guide it rectilinearly, a link connecting said lever support with said platen support for shifting said lever rectilinearly when the platen is shifted, an arm on said lever support on which said lever rests when shifted for steadying the lever, and an actuator on said frame.

30. In a typewriting machine, the combination with a shiftable platen, a ribbon carrier and printing means, of a vibrating lever for the carrier, means for shifting the lever rectilinearly when the platen is shifted, an actuator for said lever vibrated by said mechanism rectilinearly, means for disengaging said carrier from the actuator, and a rest on which the carrier is supported when disengaged.

31. In a typewriting machine, the combi-

nation with a platen, a shiftable support therefor to shift the platen, a ribbon carrier and printing means, of a vibrating lever for the carrier having its fulcrum arranged to be guided rectilinearly, a link depending from said platen support for shifting the lever rectilinearly when the platen is shifted, and an actuator for said lever vibrated by said mechanism rectilinearly.

32. In a typewriting machine, the combination with a shiftable platen, of a ribbon carrier, a lever for vibrating said carrier, an arm on which one end of said lever may rest, a guide for the fulcrum of said lever, and means for shifting said arm and said fulcrum together on said guide with the shifting platen.

FRANK C. URSBRUCK.

Witnesses:

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C. RIPLEY.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."