N. H. ANDERSON.

TYPE WRITING MACHINE.

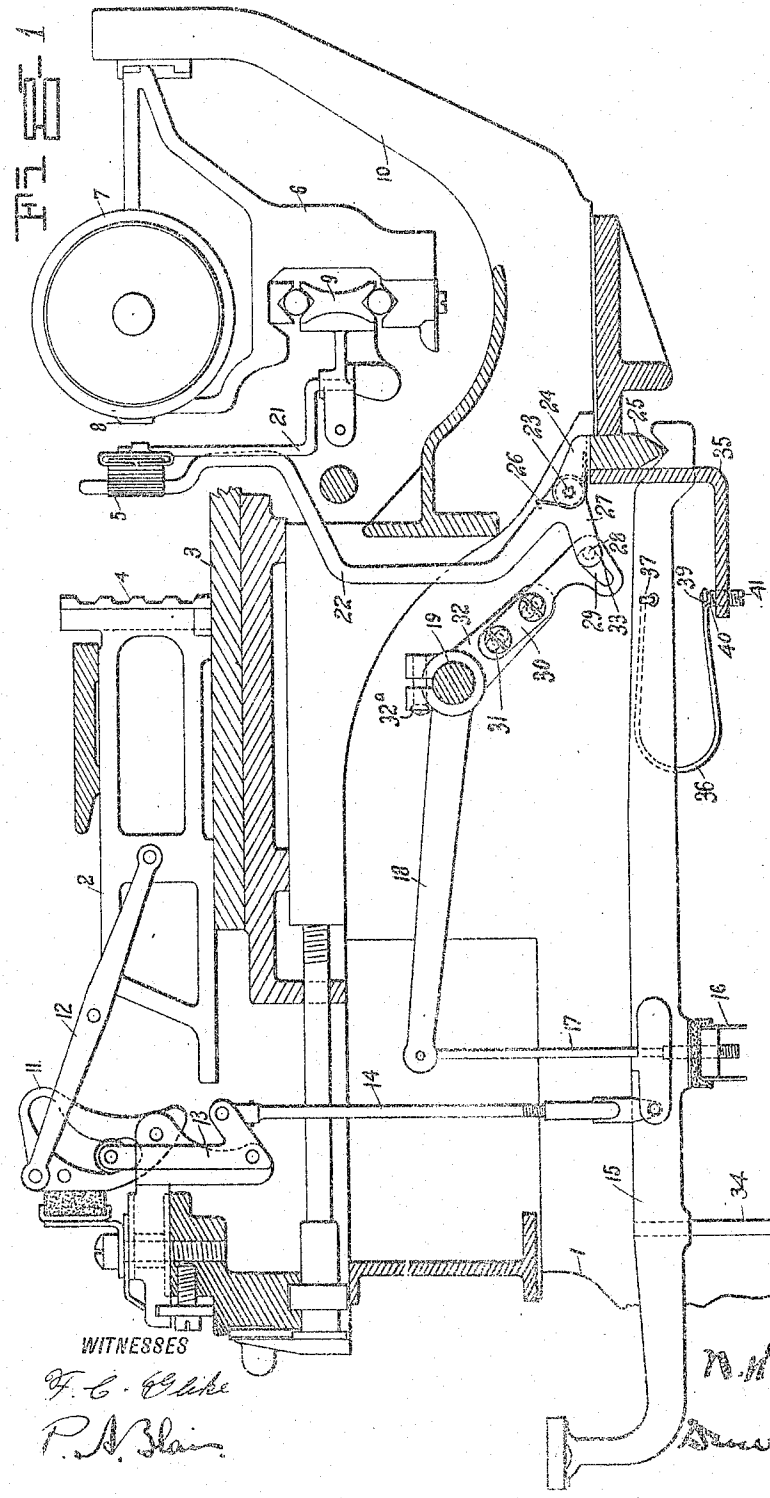
APPLICATION FILED OCT. 11, 1910.

1,141,168.

Patented June 1, 1915.

2 SHEETS—SHEET 1.

FIG. 1



WITNESSES

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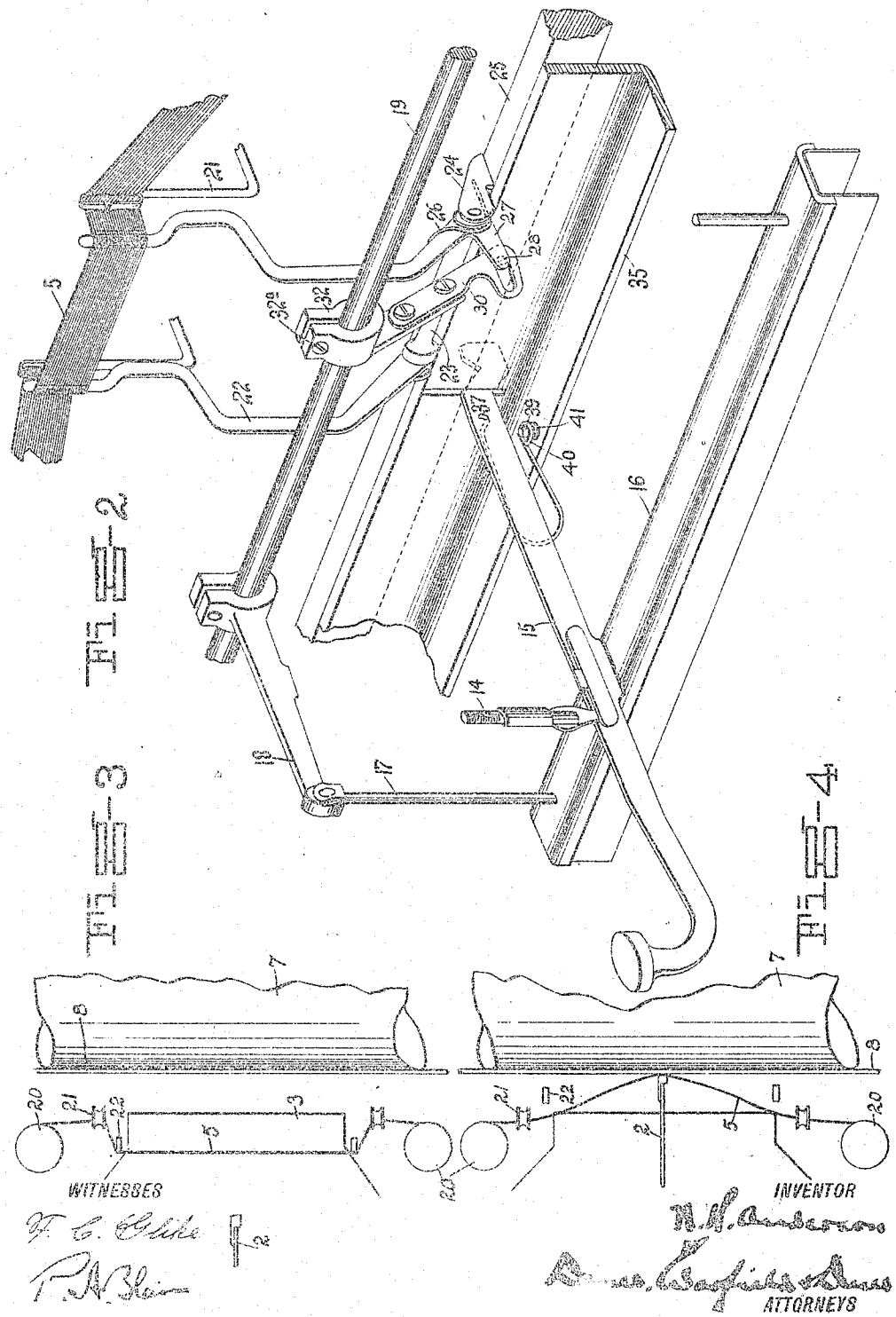
TYPE WRITING MACHINE.

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2 SHEETS—SHEET 2.



UNITED STATES PATENT OFFICE.

NILS H. ANDERSON, OF MIDDLETOWN, CONNECTICUT, ASSIGNOR TO THE NOISELESS TYPEWRITER COMPANY, OF MIDDLETOWN, CONNECTICUT, A CORPORATION OF CONNECTICUT.

TYPE-WRITING MACHINE.

1,141,168. Specification of Letters Patent. Patented June 1, 1915.

Application filed October 11, 1910. Serial No. 586,466.

To all whom it may concern:

Be it known that I, NILS H. ANDERSON, a citizen of the United States, residing at Middletown, in the county of Middlesex and State of Connecticut, have invented certain new and useful Improvements in Type-Writing Machines, of which the following is a full, clear, and exact description, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to typewriting machines, and with regard to the more specific features thereof, to ribbon mechanism therefor.

One of the objects of the present invention is to provide a simple and practical ribbon mechanism particularly adapted for visible typewriting machines.

Another object is to provide mechanism of the above character which is simple in construction and cheap to manufacture.

Another object is to provide mechanism which will be quick in operation and efficient in use.

Another object is to provide mechanism of the above character that will permit ribbons to be easily and quickly changed.

Other objects will be in part obvious and in part pointed out hereinafter.

The invention accordingly consists in the features of construction, combinations of elements and arrangement of parts which will be exemplified in the construction hereinafter set forth, and the scope of the application of which will be indicated in the following claims.

In the accompanying drawings, wherein is shown one of various possible embodiments of this invention: Figure 1 is a longitudinal sectional view of a typewriting machine, certain parts of the machine being omitted and broken away for the sake of clearness; Fig. 2 is a perspective view of the ribbon mechanism; Figs. 3 and 4 are diagrammatic plan views of the ribbon in normal and actuated positions.

Similar reference characters refer to similar parts throughout the different views of the drawings.

While the present invention is illustrated and hereinafter described as applied to a Noiseless typewriter, it is, of course, to be understood that many of the features herein shown may be applied to other forms of typewriting machines as well.

Referring to these drawings in detail, 1 denotes the base frame of the machine adapted to support, at the forward part of the machine, a type action including a pressure-operated straight thrust type carrier 2 adapted to slide on the type bed 3 and being provided at its forward end with type 4 adapted to engage a ribbon 5 when actuated and move the ribbon forwardly into engagement with the paper carried by a platen carriage 6. This platen carriage supports a platen roller 7, preferably provided, in this form of machine, with a flat metallic platen 8, and adapted to reciprocate along a shift rail 9, shiftable up and down in a vertical plane for different case printing by any suitable shift mechanism not herein shown. The carriage and platen are held against rearward movement by means of an abutment 10 engaging the rear of the carriage, as shown in Fig. 1. The type action also includes, besides the type carrier 2, actuating mechanism therefor comprising an oscillatory cam member 11 connected with the type carrier by connecting link 12, a bell crank lever 13 for moving the cam member 11, and a pull wire 14 interposed between the bell crank lever 13 and a key lever 15. The key lever 15 rests upon a universal bar 16 and is suspended by means of pull wires 17 from arms 18 near each end of a universal rock shaft 19.

The mechanism above described forms no part of the present invention, except in so far as it may enter into certain combinations, as will be more fully hereinafter described, and a more detailed description thereof is thought to be unnecessary.

At each side of the upper part of the frame of the machine are provided ribbon spools or ribbon carriers 20, as shown diagrammatically in Figs. 3 and 4, which are driven by any suitable mechanism, not herein shown, to feed the ribbon from one spool to the other through slotted ribbon guides 21 mounted adjacent the shift rail 9 and shiftable therewith. Between these ribbon guides 21, which are disposed at opposite sides of the printing point, are two vertically disposed ribbon tension or holding

members 22 mounted upon a shaft 23 pivotally supported in brackets 24 secured to the key lever fulcrum 25. One of these members 22 is engaged by one end of a spiral spring 26, so as normally to hold the tension members in forward position, as shown in Figs. 2 and 3, thereby holding the ribbon taut to expose the printing point. One of the members 22 is also provided with a forwardly projecting arm 27 carrying a pin 28 engaging a cam slot 29 at one end of an arm 30, adjustably secured as by means of set screws or the like 31, to a part 32 adjustably secured to the universal rock shaft 19 as by adjusting screw 32^a passing through the split upper end thereof. The adjustment of this part 32 will determine the time at which the tension on the ribbon will be relieved relative to the movement of the type action. This cam slot is divided into two portions of different radii, separated by an intermediate shoulder 33. The portions of the cam slot 29 are substantially concentric to each other, having the axis of oscillation of the rock shaft 19 as a center. By means of this construction the key action is permitted to have a certain amount of movement before the ribbon tension members 22 are acted upon to relieve the tension of the ribbon. The pin 28 moves along one portion of the cam slot 29 before striking the shoulder 33, whereupon the tension members will be swung about their pivotal support to release the tension upon the ribbon. As the type action completes its movement, the type carrier 2 will carry the ribbon into engagement with the paper, as shown in Fig. 4, and the rock shaft 19 together with the parts secured thereto may continue their movement without changing the position of the ribbon tension members. On the return of the type action to normal position, the cam member 30 will travel substantially half of the distance, or until the pin 28 trips over the shoulder 33, before the ribbon tensioning members 22 are returned. In rapid operation of the machine the universal bar rarely returns to a position of rest for the reason that before one key lever returns to normal position another key lever has already started on its downward movement. It is thus seen that the ribbon tensioning members, while not positively maintained in their rearward position will not completely return to the position shown in Fig. 1 at every operation of a type action, thus always more or less obscuring the printing point while the machine is in active operation, but immediately exposing the same as soon as the operator stops. It is to be seen that the forward portion of his cam slot 29 is made so as to fit stud 28 accurately. This is to prevent the take-up arms or tension members 22 from vibrating and also limiting their rearward motion. The enlarged rear portion of cam slot 29 permits the universal rock shaft 19 to which cam lever 30 is attached, to rotate, even though the ribbon take-up arms 22 should be prevented for any reason from returning to their normal position. The ribbon is carried away from the printing point to expose the writing line, through the effort of spring 26, but if for any reason the ribbon take-up arms 22 should be obstructed so that they could not return or draw the ribbon away from the printing line, the roll or stud 28 will remain on the upper side of cam slot 29 and cam lever 30, with universal rock shaft 19, will not be prevented from completing their movement.

When it is desired to change a ribbon, the ribbon tension members 22 due to the lost motion connection with the rock shaft 19 may be pressed forward without moving the universal bar mechanism, as the pin 28 is permitted to move up and down in the enlarged portion of the cam 29. When the members 22 are in their forward position, the ribbon may be more quickly threaded through the slots in the upper part of the ribbon guides 21.

The key lever 15 is fulcrumed on the fulcrum bar 25 and moves up and down in a comb member 34 at the forward part of the machine. A second comb member 35 is secured to the fulcrum bar 25 and holds the rear end of the key lever in place. This key lever is returned to normal position by means of a spring 36, one end 37 of which passes through a hole in the key lever at substantially right angles to the body portion, and is bent upwardly to engage the side thereof. The body portion of the spring engages the side of the key lever for a considerable distance and tends to prevent a lateral movement thereof as the key lever is actuated. The opposite end 39 of the spring is wound about a slightly tapered or frusto-conical pin 40 forming an integral part of a threaded member or screw 41 in the comb 35. The resiliency of the spring tends to force the coiled end downwardly upon the pin 40, thereby preventing a rotation of the screw 41 after the same has been placed in adjusted position by acting as a check nut therefor. It is thus seen that the type actions are always kept in adjusted position thereby maintaining an even touch to the machine.

It is thought that the operation and manner of use of this device should be clear from the above, but a description thereof is, in brief, as follows: Assuming the parts to be in the normal position, as shown in Figs. 1 and 2, when a key lever is depressed the type carrier 2 will be moved forwardly toward the platen. The universal bar 16 will be depressed to rotate the rock shaft

19, causing the cam member 30 to move rearwardly. When the shoulder 33 engages the pin 28 the tension members 22 will be swung quickly forward, thereby relieving the tension upon the ribbon and permitting the type carrier to carry the ribbon into engagement with the paper upon the platen. During the latter part of the movement of the type carrier the pin 28 will traverse the remaining portion of the cam slot 29 without moving the tension members 22. When the key lever is released and commences its upward movement, the type carrier will return toward normal position in the usual manner and the pin 28 will traverse the forward part of the cam slot until it reaches the shoulder 33, when it will drop down into the enlarged or rear part of the cam slot and cause the vibrators or tension members 22 to complete their movement to normal position under the action of the coiled spring. However, if the machine is being rapidly operated the ribbon tension members will not have a chance to complete the entire movement before they are again actuated in the manner above described.

It is thus seen that this invention accomplishes, among others, all of the above stated objects in a simple and practical manner.

As many changes could be made in the above construction and many apparently widely different embodiments of this invention could be made without departing from the scope thereof, it is intended that all matter contained in the above description or shown in the accompanying drawings shall be interpreted as illustrative and not in a limiting sense.

Having described my invention, what I claim as new and desire to secure by Letters Patent is:

1. In a typewriting machine, in combination, a platen roller, a type action, a ribbon positioned in the path of travel of the type and normally exposing the printing point, pivotally mounted tensioning members, a spring normally holding the same in position to tension the ribbon, and cam means coacting therewith whereby the tension of said ribbon is relieved when said type action has been partially actuated.

2. In a typewriting machine, in combination, a platen roller, a type action, a ribbon normally exposing the printing point, ribbon-tensioning members, a spring normally holding the same in position to tension said ribbon, a pin on said members, and cam means coacting with said pin to relieve the tension on said ribbon when the type action is actuated.

3. In a typewriting machine, in combination, a platen roller, a type action, a ribbon normally exposing the printing point, pivotally mounted ribbon-tensioning members, a spring normally holding the same in position to tension said ribbon, a pin on said members, and an adjustable cam member having a cam slot adapted to coact with said pin to relieve the tension on said ribbon when the type action is actuated.

4. In a typewriting machine, in combination, a platen roller, a type action, a ribbon normally exposing the printing point, ribbon-tensioning members, a spring coacting with and normally holding the same in position to tension said ribbon, a pin on said members, and an adjustable cam member having a cam slot, said slot having a shoulder intermediate its ends adapted to coact with said pin to move said ribbon-tensioning members as said type action is actuated.

5. In a typewriting machine, in combination, a platen roller, a type action, a ribbon normally exposing the printing point, pivotally mounted ribbon-tensioning members, a spring normally holding the same in position to tension said ribbon, a pin on said members, and an adjustable cam member having a cam slot, said slot having a shoulder intermediate its ends adapted to coact with said pin to move said ribbon-tensioning members when said type action has been actuated a predetermined amount.

6. In a typewriting machine, in combination, a platen roller, a type action, a ribbon adapted to expose the printing point, pivotally mounted ribbon-tensioning members, a spring normally holding the same in position to tension said ribbon, a pin connected with said members, and an adjustable cam member having a cam slot, said slot having a shoulder intermediate its ends adapted to coact with said pin to move said ribbon-tensioning members after said type action has been partially actuated and to permit said members to remain in their actuated position until said type action has partially returned to normal position.

7. In a typewriting machine, in combination, a platen roller, a type action including a front-strike type carrier and a key lever for actuating said type carrier, a universal rock shaft connected with said key lever and actuated thereby, a ribbon normally under tension and held to expose the printing point, and means adapted to relieve the tension on the ribbon whereby said ribbon may move to cover the printing point after the type carrier has moved a predetermined distance.

8. In a typewriting machine, in combination, a platen roller, a type action including a front-strike type carrier and a key lever for actuating said type carrier, a universal rock shaft connected with said key lever and actuated thereby, a ribbon normally under tension and held opposite but exposing the printing point, and means adapted to relieve the tension on the ribbon whereby

said ribbon may move to cover the printing point after the type carrier has moved a predetermined distance and to uncover the printing point when said action has returned a predetermined distance toward normal position.

9. In a visible typewriting machine, in combination, a platen roller, a type action including a type carrier and a key lever for actuating said type carrier, a universal rock shaft connected with said key lever and actuated thereby, a ribbon normally exposing the printing point, ribbon tension means for said ribbon, and means for moving said ribbon tension means toward the printing point after said type carriers have been partially actuated.

10. In a visible typewriting machine, in combination, a platen roller, a type action including a type carrier and a key lever for actuating said type carrier, a universal rock shaft connected with said key lever and actuated thereby, a ribbon normally held to expose the printing point, a ribbon-holding means, and means adapted to actuate said ribbon-holding means whereby the ribbon covers the printing point after the type carriers have moved a predetermined amount.

11. In a typewriting machine, in combination, a platen roller, a type action including a front-strike type carrier and a key lever for actuating said type carrier, a universal rock shaft connected with said key lever and actuated thereby, a ribbon normally exposing the printing point, pivotally mounted ribbon-holding members, and a cam member connected with said universal rock shaft adapted to actuate said ribbon-holding members to relieve the tension on the ribbon.

12. In a typewriting machine, in combination, a platen roller, a type action including a front-strike type carrier and a key lever for actuating said type carrier, a universal rock shaft connected with said key lever and actuated thereby, a ribbon normally exposing the printing point, pivotally mounted ribbon-holding members, and an adjustable cam member operatively connected with said universal rock shaft having a cam adapted to coact with said ribbon-holding members to move the same whereby the ribbon may move to cover the printing point when said type action is actuated.

13. In a typewriting machine, in combination, a platen roller, a type action including a front-strike type carrier and a key lever for actuating said type carrier, a universal rock shaft connected with said key lever and actuated thereby, a ribbon normally exposing the printing point, pivotally mounted ribbon-holding members, and an adjustable cam member adjustably secured to said universal rock shaft having a cam adapted to coact with said ribbon-holding members whereby the ribbon may move to cover the printing point when the type action is actuated.

14. In a typewriting machine, in combination, a platen roller, a type action including a front-strike type carrier and a key lever for actuating said type carrier, a universal rock shaft connected with said key lever and actuated thereby, a ribbon, pivotally mounted ribbon-holding members, and an adjustable cam member adjustably secured to said universal rock shaft having a cam adapted to coact with said ribbon-holding members whereby the ribbon is moved to cover the printing point when the type action is actuated and permit said ribbon-holding members to remain in their actuated position until said type action has partially returned to normal position.

15. In a typewriting machine, in combination, a platen roller, a type action including a front-strike type carrier and a key lever for actuating said type carrier, a universal rock shaft connected with said key lever and actuated thereby, a ribbon normally interposed in the path of said type carrier, ribbon guides therefor, ribbon-tensioning members, a pin on said members, and an adjustable cam member secured to said rock shaft adapted to coact with said pin to move said tensioning members when said type action is actuated.

16. In a typewriting machine, in combination, a platen roller, a type action including a front-strike type carrier and a key lever for actuating said type carrier, a universal rock shaft connected with said key lever and actuated thereby, a ribbon, ribbon guides therefor, pivotally mounted ribbon-tensioning members, a pin on said members, a cam member adjustably secured to said universal rock shaft having a cam adapted to coact with said pin, said cam having a shoulder intermediate its ends whereby said tensioning members are moved only after said cam member has moved a predetermined amount, and means whereby said predetermined amount may be regulated.

17. In a typewriting machine, in combination, a platen roller, a type action including a front-strike type carrier and a key lever for actuating said type carrier, a universal rock shaft connected with said key lever and actuated thereby, a ribbon normally interposed in the path of said type carrier, ribbon guides therefor, pivotally mounted ribbon-tensioning members, a pin on said members, and an adjustable cam member having a cam adapted to coact with said pin, said cam comprising two concentric portions with a shoulder therebetween whereby said tension members are actuated only after said cam member has moved a predetermined amount.

18. In a typewriting machine, in combi-

nation, a platen roller, a type action including a front-strike type carrier and a key lever for actuating said type carrier, a universal rock shaft connected with said key lever and actuated thereby, a ribbon normally interposed in the path of said type carrier, ribbon guides therefor, pivotally mounted ribbon-tensioning members, a pin on said members, and a cam member adjustably connected with said universal rock shaft having a cam slot adapted to coact with said pin, said slot having a shoulder intermediate its ends adapted to move said ribbon-tension members to relieve the tension on said ribbon.

19. In a typewriting machine, in combination, a platen roller, a type action including a front-strike type carrier and a key lever for actuating said type carrier, a universal rock shaft connected with said key lever and actuated thereby, a ribbon normally interposed in the path of said type carrier, ribbon guides therefor, pivotally mounted ribbon-tensioning members, a pin on said members, and a cam member adjustably connected with said universal rock shaft having a cam adapted to coact with said pin, said cam having a shoulder intermediate its ends adapted to move said tension members after the type action has been moved a predetermined amount and permit said members to remain in their actuated position until said type action has partially returned to normal position.

20. In a typewriting machine, in combination, a platen roller, a flat platen adjacent said roller, a type action including a straight-thrust front-strike type carrier and a key lever for actuating said type carrier, a universal rock shaft connected with said key lever and actuated thereby, a ribbon normally under tension and held to expose the printing point, and means adapted to relieve the tension on the ribbon after the type carrier has moved a predetermined distance whereby said ribbon may be moved to cover the printing point.

21. In a typewriting machine, in combination, a platen roller, a flat platen adjacent said roller, a type action including a straight-thrust pressure-operated front-strike type carrier and a key lever for actuating said type carrier, a universal rock shaft connected with said key lever and actuated thereby, a ribbon normally under tension and held to expose the printing point, ribbon guides for said ribbon, and means adapted to relieve the tension on the ribbon after said type action has been partially actuated whereby said ribbon is moved toward the printing point.

22. In a typewriting machine, in combination, a vertically shiftable platen carriage, a rail along which said carriage travels, ribbon guides mounted on said rail and shiftable with said platen carriage, a type action, ribbon-tensioning means normally holding said ribbon so as to expose the printing point, and means for actuating said ribbon-tensioning means to relieve the tension on the ribbon during the actuation of said type action.

23. In a typewriting machine, in combination, a vertically shiftable platen carriage, a rail along which said carriage travels, ribbon guides mounted on said rail and shiftable with said platen carriage, a type action, ribbon-tensioning means normally holding said ribbon so as to expose the printing point, and means for actuating said ribbon-tensioning means when said type action is actuated, said tensioning means permitting the ribbon to be shifted relatively thereto as said platen is shifted.

24. In a typewriting machine, in combination, a vertically shiftable platen carriage, a rail along which said carriage travels, ribbon guides mounted on said rail and shiftable with said platen carriage, a type action, ribbon-tensioning means normally holding said ribbon so as to expose the printing point, and means for actuating said ribbon-tensioning means when said type action is actuated, said tensioning means having their surfaces engaged by said ribbon curved in order to reduce the friction therebetween.

25. In a typewriting machine, in combination, a vertically shiftable platen carriage, a rail along which said carriage travels, ribbon guides mounted on said rail and shiftable with said platen carriage, a type action, ribbon-tensioning means normally holding said ribbon so as to expose the printing point, and means for actuating said ribbon-tensioning means when said type action is actuated, said ribbon-tensioning means being pivotally mounted and spring-held in normal position.

26. In a typewriting machine, in combination, a shiftable platen carriage having a platen roller mounted thereon, a rail along which said carriage is adapted to travel, ribbon guides shiftable with said carriage, a ribbon passing through said guides, a type action, a universal rock shaft, and means connected with said universal rock shaft normally holding said ribbon under tension to expose the printing point.

27. In a typewriting machine, in combination, a shiftable platen carriage having a platen roller mounted thereon, a rail along which said carriage is adapted to travel, ribbon guides shiftable with said carriage, a ribbon passing through said guides, a type action, a universal rock shaft, means between the ribbon guides adapted to hold the ribbon under tension, and means whereby said ribbon-holding means are actuated to relieve the tension on said ribbon when said type action is actuated.

28. In a typewriting machine, in combination, a shiftable platen carriage having a platen roller mounted thereon, a rail along which said carriage is adapted to travel, ribbon guides shiftable with said carriage, a ribbon passing through said guides, a type action, a universal rock shaft, a pivotally mounted tension member normally holding the ribbon away from the printing point, and a lost motion connection between said universal rock shaft and said tension member whereby the tension member is actuated to relieve the tension on said ribbon after the type action has been partially actuated.

29. In a typewriting machine, in combination, a shiftable platen carriage having a platen roller mounted thereon, a rail along which said carriage is adapted to travel, ribbon guides shiftable with said carriage, a ribbon passing through said guides, a type action, a universal rock shaft, a pivotally mounted tension member normally holding the ribbon away from the printing point, and a lost motion connection between said universal rock shaft and said tension member whereby the tension member is actuated to relieve the tension on said ribbon after the type action has been partially actuated, said tension member permitting the ribbon to be shifted relatively thereto as said carriage is shifted.

30. In a typewriting machine, in combination, a shiftable platen carriage having a platen roller mounted thereon, a rail along which said carriage is adapted to travel, ribbon guides shiftable with said carriage, a ribbon passing through said guides, a type action, a universal rock shaft, a pivotally mounted tension member normally holding the ribbon away from the printing point, and a lost motion connection between said universal rock shaft and said tension member whereby the tension member is actuated to relieve the tension on said ribbon after the type action has been partially actuated, said tension member having rounded surfaces where engaged by said ribbon to relieve the friction between said parts as the ribbon is fed.

In testimony whereof I affix my signature, in the presence of two witnesses.

NILS H. ANDERSON.

Witnesses:
CLARA A. KELSEY,
JOS. DODD.