E. Z. LEWIS.

ATTACHMENT FOR TYPE WRITERS.

APPLICATION FILED DEC. 12, 1910.

1,007,581.

Patented Oct. 31, 1911.

4 SHEETS—SHEET 1.

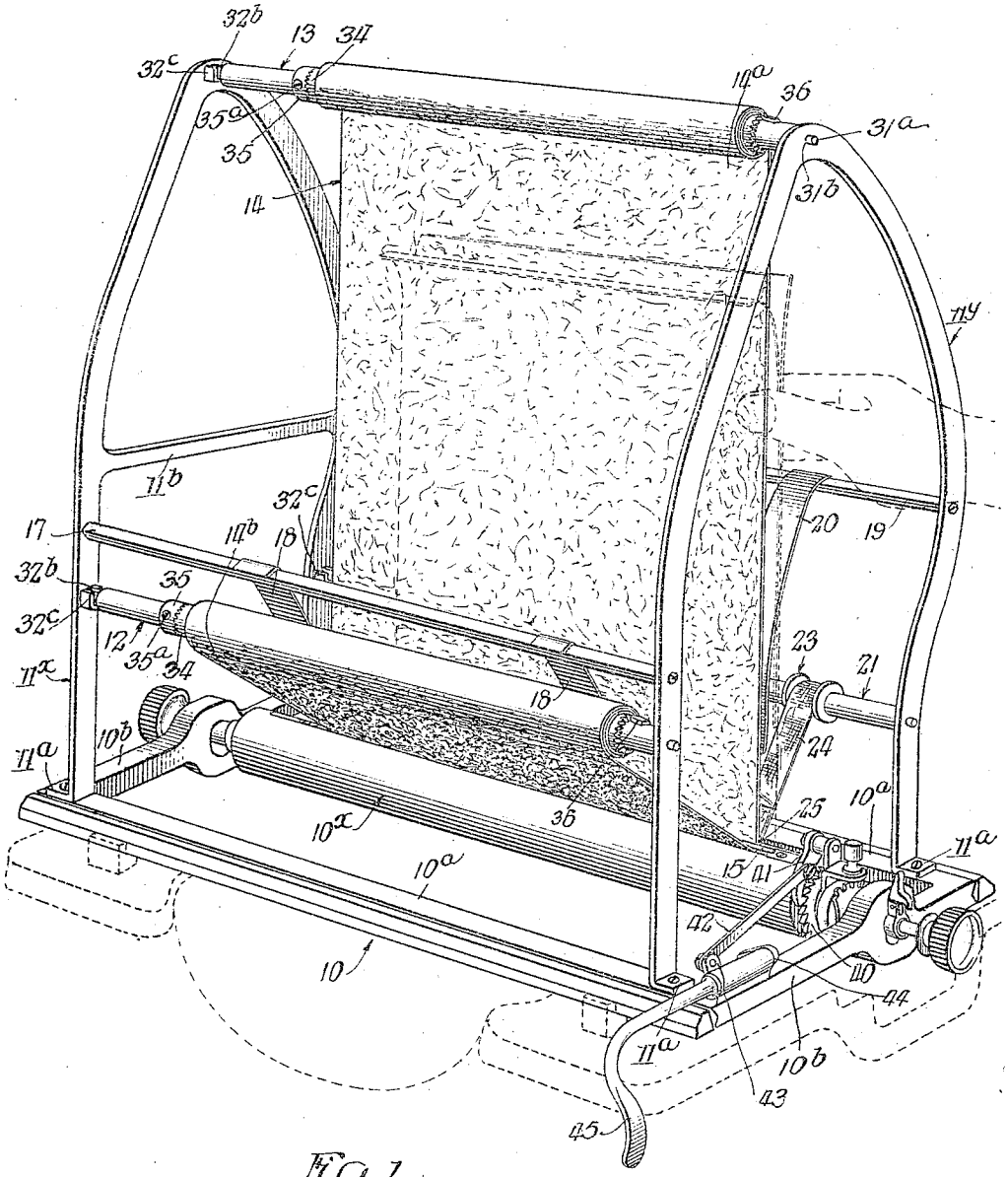

Fig. 1.

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4 SHEETS—SHEET 2.

Fig. 2.

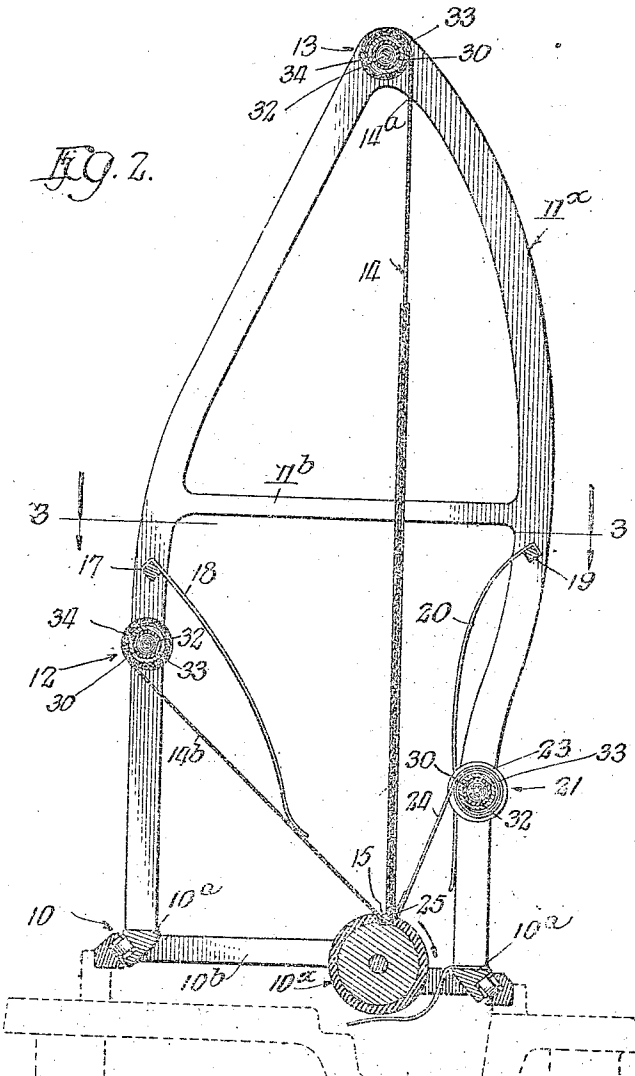
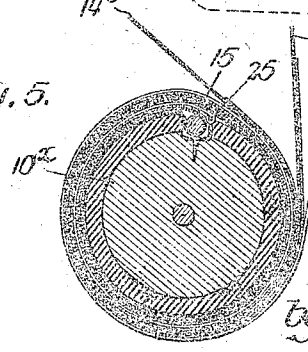


Fig. 5.



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4 SHEETS—SHEET 3.

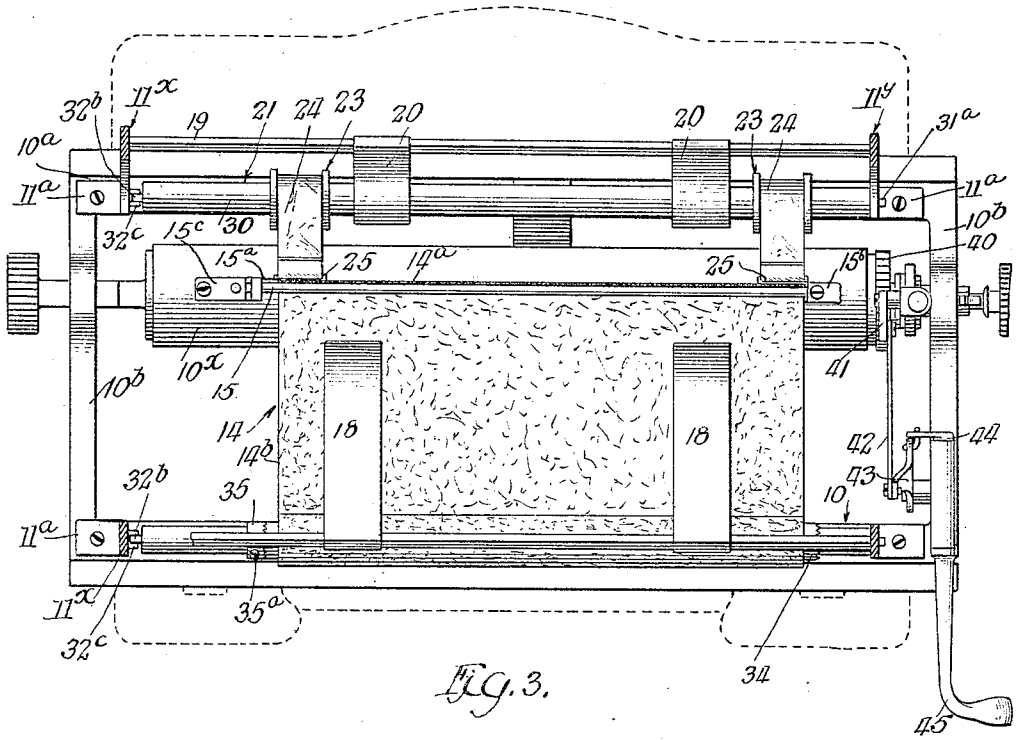
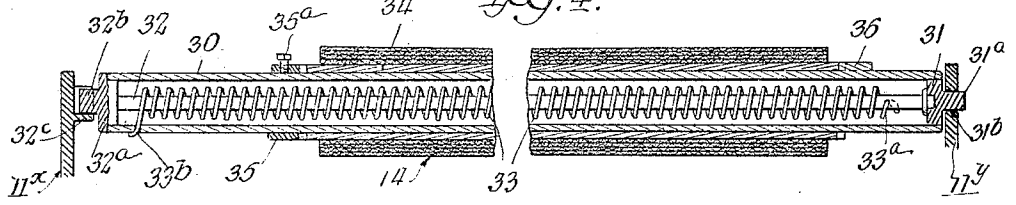


Fig. 3.

Fig. 4.



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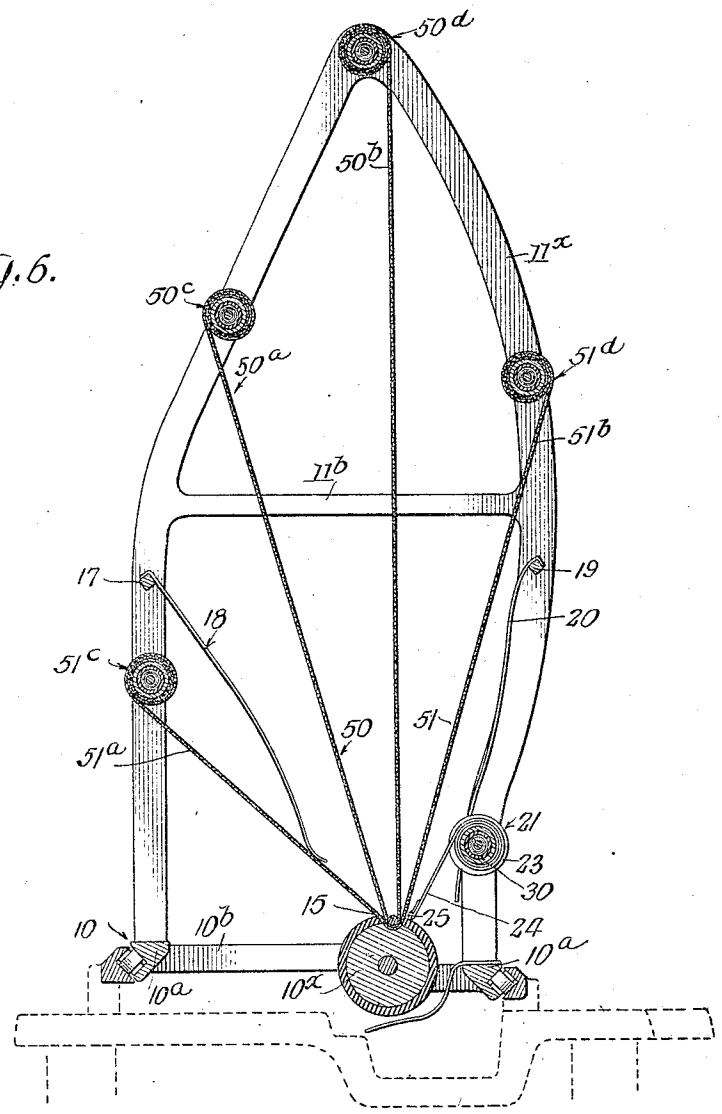
4 SHEETS—SHEET 4.

FIG. 6.



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UNITED STATES PATENT OFFICE.

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ATTACHMENT FOR TYPE-WRITERS.

1,007,581. Specification of Letters Patent. Patented Oct. 31, 1911.

Application filed December 12, 1910. Serial No. 596,922.

To all whom it may concern:

Be it known that I, EDWARD Z. LEWIS, a citizen of the United States, and a resident of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Attachments for Type-Writers; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to an attachment for typewriters and consists of a novel and improved construction adapted for making manifold copies.

The attachment is particularly intended for making manifold copies on forms printed on a sheet folded lengthwise and comprising superposed sections, each section having a plurality of forms arranged vertically one above the other on the section with the forms of one section so arranged as to lie above and register with an associated form on the other section. The manifolding sheet shown herein has its folded edge slit from its bottom edge to a point near its top in order that the two sections of the sheet will wind smoothly about the platen as described in an application filed by me October 21, 1910, Serial No. 588,306.

The invention relates to the same type of attachment for typewriting machines as that described in Letters Patent No. 940,336 granted to me on November 16th, 1909, and consists of certain novel features hereinafter described and more particularly pointed out in the appended claims.

In the drawings:—Figure 1 is a perspective view of my improved attachment for typewriting machines. Fig. 2 is a vertical section through the same. Fig. 3 is a transverse section through the attachment on the line 3—3 of Fig. 2. Fig. 4 is a longitudinal section on an enlarged scale through one of the rolls to which the carbon ribbons are attached. Fig. 5 is a transverse section on an enlarged scale through the platen, illustrating the manner in which the carbon ribbons and the manifolding sheet are together wound about the platen. Fig. 6 is a vertical section similar to that shown in Fig. 2, illustrating a slightly modified form of the invention.

I have illustrated my attachment as applied to a machine of the Remington type, but it will be apparent that it may be applied to other machines and I do not therefore limit my invention to this form of machine.

My improved attachment is applied to the paper-carriage frame and in illustrating the invention the other parts of the machine have been omitted.

10 indicates the paper-carriage which may be of any usual or convenient construction. In this instance, it comprises a rectangular frame having front and rear bars 10^a, 10^a and end bars 10^b, 10^b.

10^x indicates the platen.

11^x, 11^y indicate upright brackets rigidly secured to the paper-carriage frame 10. Said brackets have base plates 11^a which are secured by screws to the bars of said frame. The one bracket 11^x is braced by a cross bar 11^b, while the other bracket 11^y is open so as to leave plenty of room for the insertion of the manifolding sheet.

12 and 13 indicate spring controlled rolls which are rotatively mounted in the brackets 11^x, 11^y. Upon said rolls are wound the ends of a carbon ribbon 14 which passes from the spring roll 13 down about a small roll or rod 15, mounted in the surface of the platen 10^x, while its other end extends up to and is wound about the spring controlled roll 12.

14^a indicates the end of the carbon ribbon which is wound on the roll 13, and 14^b, the end of the ribbon wound about the roll 12.

The rod or roll 15 is mounted in a groove 15^a cut in the face of the platen. Said rod is hinged at one end to a block 15^b so as to be capable of swinging outwardly away from the platen for convenience in passing the ribbon about it when said ribbon is first placed in position on the machine, and when swung into the groove 15^a lies with the outer part of its periphery flush with the face of the platen, being held in this closed position by a catch 15^c adapted for engagement with its free end.

The front members of the brackets are braced apart by a bar 17 which is rigidly secured to said brackets at its ends. To said bar are attached guide plates 18, 18 which depend above the end of the carbon ribbon and are adapted to prevent the section of the manifolding sheet in contact therewith from following said end 14^b of the ribbon when the platen is rotated backward to unroll the manifolding sheet and ribbons from the platen. The rear members of the

brackets are braced apart by a bar 19, rigidly secured at its ends to the rear members of said bracket. 20, 20 indicate rear guide plates, secured to said bar 19.

21 indicates a spring controlled roll which is rotatively mounted in the rear members of the brackets 11^x, 11^y. Said roll is provided with spaced spools 23, 23, upon which are wound tapes 24, 24, the ends of which are removably connected by clips 25, 25 to the platen at the rear of the small roll 15.

To place the manifolding sheet in the typewriter attachment its folded edge is grasped by the right hand and the sections of the folded sheet are inserted top down, with the top section to the rear of the ribbon section 14^a and with its bottom section in front of said ribbon section, as clearly indicated in dotted lines in Fig. 1. The top of the folded sheet is brought into engagement with the platen which is then rotated to wind the sections of the manifolding sheet and the sections of the ribbon together on the platen, as shown in Fig. 5. At the same time the tapes 24, 24 are wound with the sections of the ribbon and with the manifolding sheet, said tapes engaging the longitudinal margins of the sheet and forming the outer layer. Said tapes hold the manifolding sheet and prevent it from becoming distorted. After the outermost form has been printed by the typewriter in the usual way the platen is released and, under the spring action of the rolls 13, 12 and 21, the ribbon sections and the tapes are unwound from the platen and rewound on their respective rolls. This movement withdraws the manifolding sheet from the platen and brings it substantially into the first position, as indicated in Figs. 1 and 2, whereupon it may be removed and replaced by another manifolding sheet. During this unwinding movement, the sections of the manifolding sheet are disengaged from the ribbon sections by the guide plates 18, 18 and 20, 20.

In the preferred form of my improved attachment, the spring controlled rolls 12 and 13 are each constructed and supported as follows: Each roll comprises a barrel 30, having a cap 31 rigidly secured to it at one end; a rod 32 rotatively mounted in said barrel and provided with a collar 32^a adapted to close the other end of the barrel; and a long coiled spring 33 which is coiled about said rod 32 and has an end 33^a connected to the rod and an end 33^b connected to the barrel. The cap 31 has a stud 31^a which engages rotatively within an aperture 31^b in the bracket 11^y, while the collar 32^a has an angular stud 32^b which engages non-rotatively within a notched lug 32^c on the bracket 11^x. The barrel 30 is thus mounted in the manner of a shade-roll.

The ribbon 14 has its ends 14^a and 14^b wound respectively about tubes 34, 34 of pasteboard or the like material. Each tube 34 is slipped on one of the barrels 30. The ends of said tube are serrated and are locked non-rotatively on the barrel by a serrated removable collar 35 located near one end of the barrel and a fixed lug 36 located near the other end, said collar and lug engaging the serrations of the pasteboard tube 34 and rigidly holding it against rotation on the barrel. The collar 35 is held in place by a set-screw 35^a. By reason of this construction, the ribbon, with its ends wrapped or wound upon the two pasteboard tubes, may be sold separately from the attachment for renewals, and after removing the rolls 12 and 13 from the brackets 11^x and 11^y, and loosening the set-screws 35^a and removing the collars 35, the tubes 34 of the old ribbon may be drawn off the barrels 30 and the like tubes of a new ribbon placed thereon.

Any convenient line-space mechanism may be used in connection with the platen. In the drawings, the platen is shown as provided with a back ratchet-wheel 40 and with a gravity controlled pawl 41 which engages said ratchet and thus locks the platen against back rotation under the action of the spring controlled rolls 12, 13, and 21. Said pawl is adapted to be released from its engagement with the ratchet by a link 42, pivotally connected at one end to the pawl and at its other end to a rock-arm 43 which is actuated by a rock-shaft 44 rotatively mounted on the paper carriage frame 10. Said rock-shaft is operated by a finger-arm 45. After the original, outer form of the manifolding sheet has been written, the finger-arm 45 is swung to withdraw the pawl 41 from engagement with the ratchet 40 and held in that position, until the ribbon sections and tapes under the action of their respective spring controlled rolls have returned to their initial position.

In Fig. 6 I have shown a modification in which the attachment is provided with a plurality of ribbons, in this case two, 50 and 51, each having, respectively, ends or sections 50^a, 50^b and 51^a, 51^b, which are wound about spring controlled rolls 50^c, 50^d and 51^c, 51^d. Said rolls are mounted in the brackets 11^x, 11^y as before and the ribbons are looped about the rod 15 on the platen, one below the other. By this construction the number of copies possible may be largely increased.

In all cases the coiled springs in the spring-controlled rolls upon which the ribbons are wound are made quite long so as to produce the required tension without materially increasing said tension when the ribbon is nearly or completely unwound from its roll. In order to change the ribbon to bring a new part under the type it is simply necessary to wind up one roll or the other which immediately shifts the ribbon. The friction of the ribbon against the rod 15 will

cause it to remain in any position in which it is placed.

I claim as my invention:—

1. In a typewriter, in combination with a platen provided with a longitudinal groove in its face, and a rod mounted therein, spaced spring controlled rolls with their central axes parallel to said platen rotatively mounted at a distance from said platen, and a ribbon looped about said rod and having its ends wound upon said spring controlled rolls.

2. In a typewriter, in combination with a platen provided with a longitudinal groove in its face, and a rod mounted therein, spaced spring controlled rolls with their central axes parallel to said platen rotatively mounted at a distance from said platen, a ribbon looped about said rod and having its ends wound upon said spring controlled rolls, a third spring controlled roll with its axis parallel to that of the platen, located at the rear of the first mentioned rolls, and marginal tapes spaced longitudinally on said third roll and wound thereon and having their free ends secured to said platen surface back of said rod.

3. In a typewriter, in combination with a paper-carriage embracing a frame and a platen rotatively mounted thereon, upright brackets secured to said frame, spring controlled rolls rotatively mounted in said brackets above said platen with their axes of rotation parallel to that of said platen, said rolls being spaced from each other, a ribbon having its ends wound upon said rolls, and means for attaching a part of said ribbon intermediate its ends to the surface of said platen.

4. In a typewriter, in combination with a paper-carriage embracing a frame and a platen rotatively mounted thereon, upright brackets secured to said frame, spring controlled rolls rotatively mounted in said brackets above said platen with their axes of rotation parallel to that of said platen, said rolls being spaced from each other, a ribbon having its ends wound upon said rolls, a rod mounted in the surface of said platen, said ribbon having its ends wound upon said spring controlled rolls and being looped about said rod intermediate its ends, and a third spring controlled roll rotatively mounted in said brackets at the rear of the platen, provided with longitudinally spaced tapes wound thereon and connected at their forward ends to the platen at the rear of said rod.

5. In a typewriter, in combination with a paper-carriage embracing a frame and a platen rotatively mounted thereon, upright brackets secured to said frame, spring controlled rolls rotatively mounted in said brackets above said platen with their axes of rotation parallel to that of said platen, said rolls being spaced from each other, a rod mounted in the surface of said platen, a ribbon having its ends wound upon said spring controlled rolls and being looped about said rod intermediate its ends, and a spring controlled shaft rotatively mounted in said brackets at the rear of the platen, spools rigid with said shaft and spaced longitudinally thereon, and tapes wound on said spools and connected at their forward ends to the platen at the rear of said rod.

6. In a typewriter, in combination with a paper-carriage embracing a frame and a platen rotatively mounted thereon, upright brackets secured to said frame, spring controlled rolls rotatively mounted in said brackets above said platen with their axes of rotation parallel to that of said platen, said rolls being spaced from each other, a ribbon having its ends wound upon said rolls, means for attaching a part of said ribbon intermediate its ends to the surface of said platen, and guide plates supported by said brackets and extending toward said ribbon.

7. In a typewriter, in combination with a paper carriage embracing a frame and a platen rotatively mounted thereon, said platen being provided with a longitudinal groove in its face, and a rod mounted therein, spaced spring controlled rolls with their central axes parallel to said platen rotatively mounted at a distance from said platen, and a ribbon looped about said rod and having its ends wound upon said spring controlled rolls, said spring controlled rolls each embracing removable spring tension barrels, endwise movable tubes located on said barrels, and means for locking said tubes nonrotatively on said barrels, said ribbon ends being wound directly upon said tubes.

8. In a typewriter, in combination with a platen provided with a longitudinal groove in its face and a rod mounted therein, a plurality of spaced spring-controlled rolls with their central axes parallel to said platen rotatively mounted at a distance from said platen, said rolls being arranged in pairs, and a plurality of ribbons, each ribbon being looped about said rod and having its ends each wound upon one of a pair of said rolls.

In testimony, that I claim the foregoing as my invention I affix my signature in the presence of two witnesses, this 14th day of November A. D. 1910.

EDWARD Z. LEWIS.

Witnesses:

GEORGE R. WILKINS,

T. H. ALFREDS.