

1,016,056.

Patented Jan. 30, 1912.

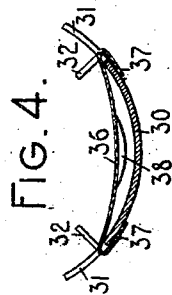
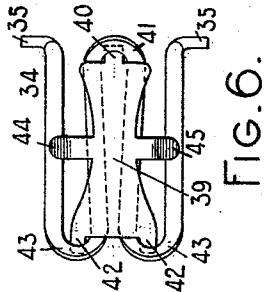
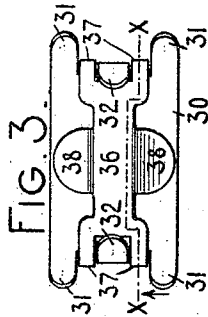
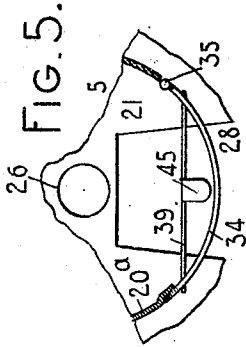
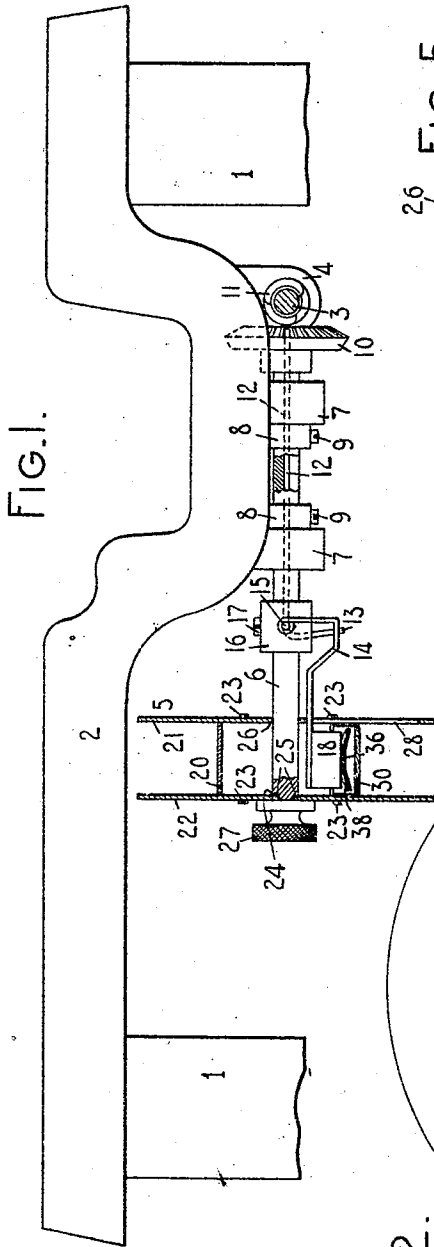
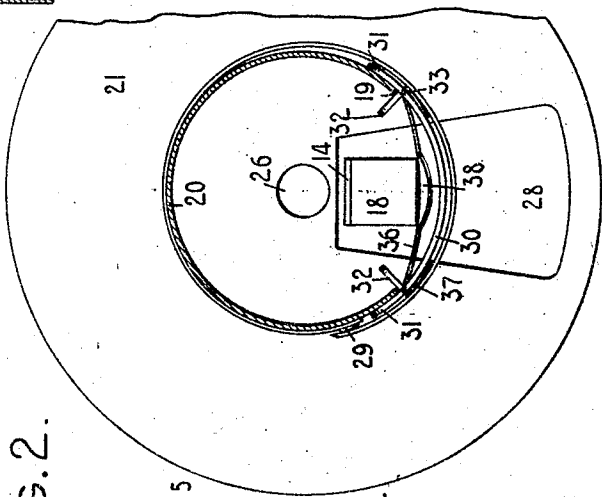


FIG. 2.



WITNESSES:

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UNITED STATES PATENT OFFICE.

OSCAR WOODWARD, OF MONTCLAIR, NEW JERSEY, ASSIGNOR TO REMINGTON TYPE-WRITER COMPANY, OF ILION, NEW YORK, A CORPORATION OF NEW YORK.

TYPE-WRITING MACHINE.

1,016,056.

Specification of Letters Patent.

Patented Jan. 30, 1912.

Application filed April 24, 1911. Serial No. 622,989.

To all whom it may concern:

Be it known that I, OSCAR WOODWARD, citizen of the United States, and resident of Montclair, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Type-Writing Machines, of which the following is a specification.

My invention relates to typewriting machines and more particularly to ribbon spools and ribbon mechanism of such machines.

In some machines, such for instance as the Nos. 10 and 11 Remington machines, the ribbon spools have hollow cores and ribbon reversing devices, carried by the machine, are received in these hollow cores when the spools are placed on the machines; the reversing devices being intended to drop through openings in the spool cores when the ribbon is exhausted, and the direction of the feed of the ribbon is to be reversed. The ribbons are tightly wound on the spools at the ribbon factory and unless means are provided to prevent, the ribbon would be pressed into the opening in each spool core and there would be difficulty in placing the spools on the machines.

My present invention relates more particularly to means for preventing the ribbon from pressing into the opening in the core of the spool before the spool is placed on the machine and also to means for preventing an improper actuation of the reversing mechanism.

To the above and other ends which will hereinafter appear, my invention consists in the features of construction, arrangements of parts and combinations of devices to be set forth in the following description and particularly pointed out in the appended claims.

In the accompanying drawings in which like reference numerals represent corresponding parts in the various views, Figure 1 is a fragmentary side elevation, partly in section, of one form of typewriting machine embodying my invention. Fig. 2 is a fragmentary cross section of one of the ribbon spools on an enlarged scale. Fig. 3 is a detail inside view of one form of bridge-piece

embodying my invention, the said bridge-piece being equipped with a contact device in accordance with my invention. Fig. 4 is a central longitudinal sectional view of the same taken on the line $x-x$ in Fig. 3 and looking in the direction of the arrow at said line. Fig. 5 is a fragmentary transverse sectional view of a ribbon spool equipped with a modified form of bridge-piece and contact device embodying my invention. Fig. 6 is an inside view, corresponding to Fig. 3, of a modified form of bridge-piece and contact device embodying my invention.

I have shown my invention in the present instance embodied in a No. 10 or 11 Remington machine, although it should be understood my invention may be embodied in various styles of typewriting machines.

The present invention is in the nature of an improvement on the construction shown in my Patent No. 971,234, dated September 27th, 1910 and also on the construction shown in the patent to C. B. Yaw No. 971,098 dated September 27th, 1910.

The corner posts 1 of the frame support a top plate 2 over which the usual carriage (not shown) travels from side to side of the machine under power applied thereto by the usual spring drum which is geared in the ordinary manner to a main transverse driving shaft 3 journaled in hangers 4 depending from the top plate. There are two ribbon spools 5, one at either side of the machine; each of said spools being mounted on the forward end of a driving shaft 6 journaled in hangers 7 depending from the top plate. Each shaft 6 is provided with collars 8 secured thereto by set screws 9, to prevent endwise motion of the shaft in its hangers. Each of said shafts extends fore and aft of the machine and is provided at its rear end with a bevel gear 10 adapted to mesh with an associated bevel pinion (not shown) on the main driving shaft 3. Said main driving shaft is adapted to be shifted lengthwise to gear it to one or the other of the gears 10.

Provision is made in the machine for shifting the shaft 3 to reverse the direction of feed, this being done automatically by reversing mechanism including a worm 11

just back of each of the shafts 6. Each worm is adapted to be engaged by the rear end of a rod 12 which lies in a longitudinal slot in the associated shaft 6. The forward end of each rod 12 is bent outwardly, forming an arm 13, which passes through a hole in the plate-like arm 14 which is pivoted at 15 on a block 16 which surrounds the associated shaft 6 and is secured to its shaft by a set screw 17. The arm 14 extends first at right angles to the associated shaft 6 and is then bent toward the front of the machine, as shown in Fig. 1, and has a weight 18 carried at its forward end. This weight is situated inside the hollow core of the associated ribbon spool where it is normally held up somewhat close to the shaft 6 by the coils of ribbon on the spool, as will hereinafter more clearly appear. When the ribbon is exhausted from a spool the associated weight 18 drops through an opening 19 in the core 20 of the spool, and this results in rocking the arm 14 and pushing the associated rod 12 toward the rear. The rear end of said rod engages the associated worm 11 which, by the continued rotation of the shaft 3, causes said shaft to be moved lengthwise to bring the adjacent gear on the driving shaft 3 into mesh with the bevel gear 10 on the shaft 6 carrying the empty spool. This longitudinal movement of the driving shaft 3 likewise carries the gear thereon at the opposite side of the machine out of mesh with the gear 10 on the shaft carrying the ribbon spool which has the ribbon completely wound thereon.

The parts thus far described constitute portions of Nos. 10 and 11 Remington machines and further detail description thereof is deemed unnecessary.

In addition to the core 30 each ribbon spool comprises a rear flange 21 and a forward flange 22, said flanges being secured to the core by means of lugs 23 projecting from the edges of the core and extending through openings in the flanges, and bent over to hold the flanges in place. The flange 22 has a central opening 24 with two oppositely projecting lugs 25 and the flange 21 has a central round opening 26. Each spool is placed on its shaft 6 at the front end thereof and the lugs 25 are received in shallow grooves extending longitudinally of the shaft, these lugs cooperating with the rear walls of the grooves to limit the motion of the spools toward the rear and also locking each spool to rotate with its shaft 6. Each spool is secured in position by a milled head 27 threaded onto the end of the associated shaft. The rear flange 21 of each spool has an opening 28 therein which allows the reversing weight 18, and the arm 14 which carries it, to enter the hollow core of the associated spool when the spool is placed on the shaft, and said opening is also of such

dimensions as to permit the weight to drop down beyond the core of the ribbon spool when the ribbon is exhausted. The core of each ribbon spool has hooks 29, or other suitable means, by which one end of the ribbon may be connected thereto. These hooks are preferably struck up from the body portion of the core and are bent back to secure the ribbon in place thereon.

The ribbon is wound tightly on the core of each spool at the ribbon factory and if it should be forced into the opening 19, it would be liable to interfere with the placing of the spool in position on its shaft 6 by reason of the reversing weight 18 which is to be received within the core, striking the edge of the ribbon. In order to avoid this difficulty, I have provided a bridge piece described as a whole by the reference numeral 30 and one form of which is shown in detail in Figs. 3 and 4. This bridge piece is made of stiff metal and is curved to conform to the general curvature of the core of the spool and is of sufficient length to span or cover the opening 19 in the core. When the bridge piece is placed in position, longitudinally extending fingers 31 thereon rest upon the outer face of the core, as shown in Fig. 2, and support the bridge against the inward pressure of the ribbon thereon. Inwardly projecting fingers 32 are likewise struck up from the body portion of the metal from which the bridge piece is formed and these inwardly directed fingers are received in the opening 19 in the core, as shown in Fig. 2, and cooperate with the end walls of the opening to prevent a displacement of the bridge piece circumferentially of the score.

Each bridge piece 30 is detachable from its spool, being held in position solely by the ribbon 33 which surrounds the core and bridge piece, and when the ribbon is exhausted from the spool and the bridge piece is in the lowermost position shown in Fig. 2, it will drop by its own weight from the spool and out of the machine. It being understood that the bridge pieces are used primarily to resist the tight winding of the ribbon at the factory and to prevent the ribbon, tightly wound upon the spool, from pressing into the opening 19 so as to interfere with the easy entrance of the ribbon reverser weight when the spool is positioned in the machine on its shaft 6. It will be understood that the bridge piece having once performed its office in this respect, is of no further use. When, therefore, in the operation of the machine the ribbon is exhausted from the spool and the bridge piece is discharged from the spool, it is of no further value and may be thrown away. From certain aspects of my invention, however, it may be deemed desirable to provide a bridge piece which is pivoted to the spool and con-

stitutes a permanent part thereon, as in the construction shown in my Patent No. 971,234. I have illustrated such a construction in Figs. 4 and 5 from which it will be seen that the bridge-piece, which is designated as a whole by the reference numeral 34, is made of wire and is bent into the form of the letter M with laterally projecting pivots 35 formed by the ends of the wire constituting the bridge-piece. These pivots are received in openings in the flanges 21 and 22 of the spool in order to pivotally connect the bridge at one end to the flanges. The opposite end of the bridge rests on the core 20^a of the spool at the opposite side of the opening in the core from that at which the bridge-piece is pivoted. In this construction the bridge-piece drops or turns to the lowermost position on its pivot when the ribbon is exhausted, to uncover the opening and allow the reversing weight to drop through said opening and thereby effect a reversal of the direction of the feed of the ribbon.

By reason of the different styles of reversing weights 18 used in different machines to which the spools are to be applied, there will be found to be a variation in the thickness of the weights 18, some occupying more, and some less, space within the hollow core of the ribbon spool between the shaft 6 and the bridge-piece. In order that the thin weights, as well as the thick ones, may be properly maintained in position so that the rods 12 may not be projected rearwardly to effect a reversal in the direction of the feed when such a reversal is not required, I have provided on each of the bridge pieces a contact device designated as a whole by the reference numeral 36 in Figs. 3 and 4. This device is preferably made of light, soft yielding material or of metal having sufficient resilience to be pressed toward the bridge-piece by the weight if the weight 18 be of sufficient thickness to effect a compression of the member 36. If the reverser weight is sufficiently thin it will not compress the part 36, but nevertheless the part 36 will press against and hold the thinnest weight used in proper position so that it cannot effect a reversal in the direction of the ribbon feed until the bridge-piece swings down or drops out of the machine and the ribbon is exhausted from a spool. The member 36 may be of any suitable form or material and may be connected in any suitable manner with the bridge-piece. In Figs. 3 and 4 I have shown a thin sheet metal strip provided with fingers 37 which are bent and extend around to the outside of the bridge-piece and loosely embrace it so as to afford a slight sliding movement of the fingers when the body portion of the member 36 is flexed or bent. The member 36 is also provided

with laterally projecting wings 38 which extend from opposite sides thereof and are inclined toward the body portion of the bridge so as to provide beveled faces for co-operation with the weight 18 when a spool is placed in position on its shaft 6. The relation of the parts is such that the pressure of the member 36, if pressure is required, is exerted toward the axis of the ribbon spool and maintains the weight 18 in its normal position or properly positioned so that it cannot move downward away from the shaft 6 a distance sufficient to move the associated reversing rod 12 rearwardly into mesh with the companion worm 11.

After a detachable bridge-piece is discharged from the machine and the ribbon is rewound on the spool from which the bridge-piece was discharged, the ribbon will enter the opening 19 in the core and assume some such position as that formerly occupied by the contact device 36, as shown in Fig. 4 for example. The ribbon therefore will press directly against the weight and prevent it from moving down far enough to reverse the feed until the ribbon is exhausted from the spool. Moreover, the ribbon entering the opening 10 will occupy less space, or the wound ribbon will be of less diameter, than it would if the bridge piece were in place when the ribbon is rewound in a comparatively loose state on the spool, and there is not so much danger of the ribbon overflowing the spool or passing over the flanges thereof.

As hereinbefore pointed out, the member 36 may be of any suitable shape and may be attached in any suitable manner to the bridge-piece which carries it. In Figs. 5 and 6 I have shown a modified form of connection between the contact device and the bridge piece. In these figures the member 39 is made of light spring metal and is provided at one end with a central projection or engaging stud or finger 40 adapted to be received in the loop 41 of the wire bridge-piece 34. The opposite end of the spring plate 39 is provided with two outwardly extending projections or engaging studs 42, each of which is adapted to be received in a loop 43 of the bridge-piece 34. The plate-like spring metal member 39 is flexed and sprung into place with the engaging fingers seated in the loops, thus connecting the member 39 at its ends to the bridge-piece and leaving the member free to be compressed intermediate of its ends toward the bridge-piece. I have also provided laterally extending projections 44 and 45 on the member 39. These projections are each inclined by being bent downwardly toward the bridge-piece in order to form inclined faces cooperative with the weight 18 when the ribbon spool is placed in position on its shaft.

In the construction shown in Figs. 3 and 4 the bridge piece may be employed on either the right or left-hand spool and no care need be exercised in this respect as the bridge piece is equally applicable to both spools.

While I prefer to provide a detachable bridge-piece of the general character represented in Figs. 3 and 4, it should be understood that a pivoted bridge-piece of the character shown in Figs. 5 and 6 may be provided with an inwardly projecting yielding contact device for cooperation with the counterweight or reversing device of the associated ribbon spool shaft. In either instance the spring or contact device prevents the weight from dropping far enough to effect a reversal in the direction of the feed when the weight is smaller than ordinary and prevents a reversal of the feed until such time as the ribbon is exhausted from the spool and permits the bridge-piece to drop and uncover the opening in the core of the ribbon spool; when the weight is free to drop down and effect an actuation of the associated rod 12 and thereby bring about a reversal in the direction of the feed of the ribbon.

It will be observed that in each of the examples shown the bridge constitutes an arch piece for the core opening and is provided on one side with a yielding face.

What I claim as new and desire to secure by Letters Patent, is:—

1. A ribbon spool having a hollow core with an opening therein and a detachable bridge piece which covers said opening and which is held in place and maintained on the spool wholly by the ribbon wound on the core.

2. A ribbon spool having a hollow core with an opening therein and a detachable bridge-piece which covers said opening and which is held in place by the ribbon wound on the core, and a spring carried by said bridge-piece on the inner side thereof and contained within the hollow core when the bridge-piece is in place and normally maintained away from the bridge piece.

3. A ribbon spool having a hollow core with an opening therein and a movable bridge-piece adapted to span said opening and to cover and uncover the opening, the bridge-piece being held in place to cover the opening by the ribbon which surrounds the core, and a yielding contact device carried by said bridge piece and extending into the hollow core when the bridge piece is in place and adapted to move away from the axis of the spool.

4. In a typewriting machine, the combination of a ribbon spool having a hollow core with an opening therein; reversing mechanism comprising a reversing device normally contained within the hollow core when the spool is in place on the machine and

adapted to move through said opening in the core when the ribbon is fully unwound from the spool; and a detachable bridge-piece adapted to span the opening in the core, which bridge-piece is held in place over said opening wholly by the ribbon wound on the core.

5. In a typewriting machine, the combination of a ribbon spool having a hollow core with an opening therein; reversing mechanism comprising a reversing device normally contained within the hollow core when the spool is in place on the machine and adapted to move through said opening in the core when the ribbon is fully unwound from the spool; a bridge-piece adapted to span the opening in the core, which bridge-piece is held in place over said opening by the ribbon wound on the core; and a yielding contact device carried by said bridge-piece and cooperative with said reversing device.

6. In a typewriting machine, the combination of a ribbon spool having a hollow core with an opening therein; reversing mechanism comprising a reversing device normally contained within the hollow core when the spool is in place on the machine and adapted to move through said opening in the core when the ribbon is fully unwound from the spool; a detachable bridge-piece adapted to span the opening in the core, which bridge-piece is held in place over said opening wholly by the ribbon wound on the core, the construction and arrangement of the parts being such that the detachable bridge-piece will drop out of the machine when the ribbon is unwound from the spool and the ribbon no longer constitutes a support for the bridge-piece; and a flexible contact member which is carried by said bridge-piece and holds the reversing device in its normal position within the spool core when the bridge-piece is in place.

7. In a typewriting machine having ribbon feeding and reversing mechanism, the combination of a shaft, a reverser weight mounted on said shaft and constituting part of the reversing mechanism, a ribbon spool mounted on said shaft and having a hollow core in which said weight is situated, and said core having an opening through which said weight is arranged to fall when the ribbon is exhausted from the spool, a movable bridge-piece which spans said opening and which is arranged to uncover said opening when the ribbon is exhausted from the spool, and a flexible member carried by said bridge-piece and cooperative with said reverser weight to hold it in its normal position.

8. In a typewriting machine having ribbon feeding and reversing mechanism, the combination of a shaft, a reverser weight mounted on said shaft and constituting

part of the reversing mechanism, a ribbon spool mounted on said shaft and having a hollow core in which said weight is situated, and said core having an opening through which said weight is arranged to fall when the ribbon is exhausted from the spool, and a detachable bridge-piece which spans said opening and which is held in place wholly by the ribbon wound on the spool, the construction and arrangement of the parts being such that the bridge-piece will drop out of the machine and release the weight when the ribbon is exhausted from the spool.

9. In a typewriting machine having ribbon feeding and reversing mechanism, the combination of a shaft, a reverser weight mounted in said shaft and constituting part of the reversing mechanism, a ribbon spool mounted on said shaft and having a hollow core in which said weight is situated, and said core having an opening through which said weight is arranged to fall when the ribbon is exhausted from the spool, a detachable bridge-piece which spans said opening and which is held in place wholly by the ribbon wound on the spool, the construction and arrangement of the parts being such that the bridge-piece will drop out of the machine and release the weight when the ribbon is exhausted from the spool, and a yielding member carried by said bridge-piece and cooperative with said weight to hold it in normal position.

10. In a typewriting machine having ribbon feeding and reversing mechanism, the combination of a shaft, a reverser weight mounted on said shaft and constituting part of the reversing mechanism, a ribbon spool mounted on said shaft and having a hollow core in which said weight is situated, said core having an opening and said spool having flanges one of which is apertured to admit said weight and to allow it to drop when the ribbon is exhausted from the spool, a bridge arranged normally to bridge or close said opening in said core and to drop out of the way of said weight when the ribbon is exhausted from the spool, and a spring carried by said bridge and cooperative with said weight to hold it in normal position.

11. In a typewriting machine having ribbon feeding and reversing mechanism, the combination of a shaft, a ribbon spool detachably mounted on said shaft and having flanges and a hollow core, a reverser weight mounted on an arm which is pivoted to said shaft and constituting part of the reversing mechanism, said core having an opening through which said weight can drop when the ribbon is exhausted from the spool and one of said flanges having an opening through which said weight is

thrust when the spool is placed upon the shaft, a bridge over said opening in the core and arranged to drop away when the ribbon is exhausted from the spool, and a spring carried by said bridge and cooperative with said weight to hold it in normal position.

12. A ribbon spool having a hollow core with an opening therein, and a bridge piece detachable from said spool and adapted to span said opening, said bridge-piece having inwardly projecting lugs that are received in said opening and prevent a movement of the bridge-piece circumferentially of the core.

13. A ribbon spool having a hollow core with an opening therein, a bridge-piece detachable from said spool and adapted to span said opening, said bridge-piece having inwardly projecting lugs that are received in said opening and prevent a movement of the bridge-piece circumferentially of the core, and a yielding contact device carried by said bridge-piece and extending into the hollow core and yielding away from the axis of the spool.

14. In a typewriting machine, the combination of a ribbon spool having a hollow core with an opening therein, ribbon reversing mechanism comprising a reversing device adapted to be contained within said hollow core and movable outwardly from the axis of said spool away from its normal position and out through said opening, and a yielding contact device which is held in place by the ribbon wound on the spool and which is cooperative with said reversing device to maintain it in normal position.

15. A ribbon spool having a hollow core with an opening therein, a bridge-piece which spans said opening and which is movable to uncover the same, and a resilient contact device carried by and detachable from said bridge-piece.

16. A ribbon spool having a hollow core with an opening therein, a bridge-piece which spans said opening and which is movable to uncover the same, and a resilient contact device having fingers by which said device is connected to the bridge-piece.

17. A ribbon spool having a hollow core with an opening therein, a bridge piece which spans said opening and which is movable to uncover the same, and a resilient contact device detachably carried by said bridge-piece at the inner side thereof, said resilient contact device being adapted to exert a pressure toward the axis of the spool and having fingers projecting therefrom and by which the contact device may be detachably connected with the bridge-piece.

18. A bridge for the core opening of ribbon spools, comprising an arch piece and a yielding part that normally stands away

from the body portion of the arch piece and may be deflected toward it against the pressure of said yielding part.

19. A bridge for the core opening of ribbon spools, comprising an arch piece provided with locating lugs that extend longitudinally inwardly toward the axis of the spool when the bridge is in position thereon.

20. A ribbon spool having a hollow core with a lateral opening therein and a detachable bridge-piece which covers said opening and in the initial factory winding of the ribbon enables it to be wound tightly on the core without entering said opening, said bridge piece being held in place only by the ribbon and in such manner that when the ribbon is wholly unwound while in use on the machine the said bridge-piece is adapted to become automatically detached

from the core for the purpose of enabling the said ribbon when rewound on the spool while in use in the machine to partially enter said opening and thus enable the ribbon to be rewound in smaller coils or present a completely wound spool of less diameter than would be the case with the bridge retained, whereby in the ordinarily loose winding necessarily obtained in the machine the ribbon is prevented from overflowing the spool.

Signed at the borough of Manhattan, city of New York, in the county of New York, and State of New York, this 22nd day of April, A. D. 1911.

OSCAR WOODWARD.

Witnesses:

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CHARLES E. SMITH.