No. 794.494. PATENTED JULY 11, 1905.

E. L. FOSTER.

TYPE WRITING MACHINE.

APPLICATION FILED MAR. 25, 1902.

Fig. 1.

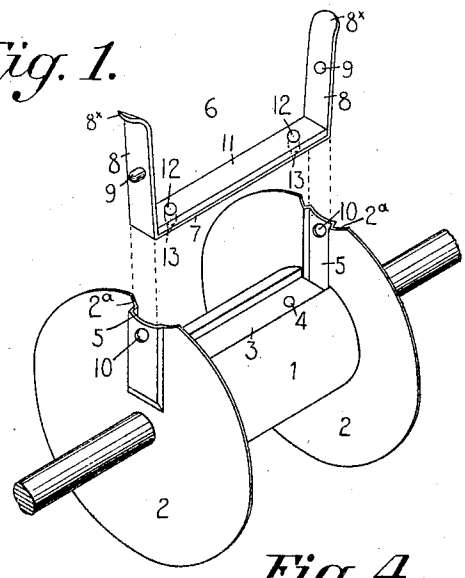


Fig. 4.

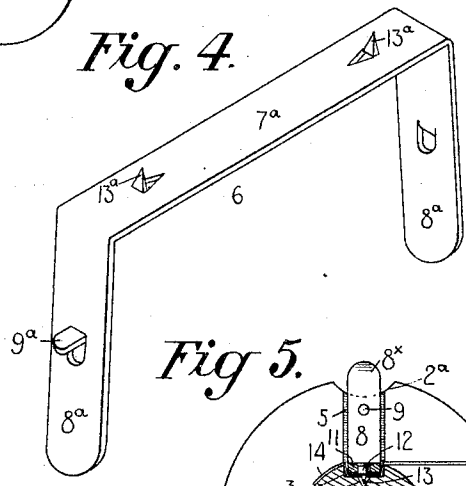


Fig. 2.

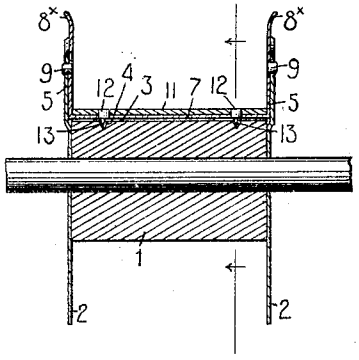


Fig. 5.

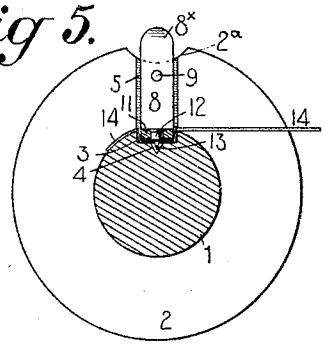
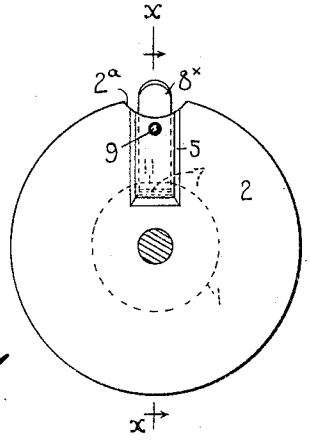


Fig. 3.



WITNESSES

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UNITED STATES PATENT OFFICE.

EDWIN L. FOSTER, OF JACKSONVILLE, ILLINOIS, ASSIGNOR TO WYCKOFF, SEAMANS & BENEDICT, OF ILION, NEW YORK, A CORPORATION OF NEW YORK.

TYPE-WRITING MACHINE.

SPECIFICATION forming part of Letters Patent No. 794,494, dated July 11, 1905.

Application filed March 25, 1902. Serial No. 99,836.

To all whom it may concern:

Be it known that I, EDWIN L. FOSTER, a citizen of the United States, and a resident of Jacksonville, in the county of Morgan and State of Illinois, have invented certain new and useful Improvements in Type-Writing Machines, of which the following is a specification.

My invention relates to ribbon-spools and to means for connecting a ribbon thereto, and is more particularly adapted for type-writing machines.

The main object of my invention is to provide a simple, cheap, and efficient construction by which the ribbon can be quickly and securely connected to the ribbon-spool and readily disconnected therefrom.

A further object of my invention is to provide means by which an inking-ribbon can be readily connected to and disconnected from the spools without the necessity of soiling the hands.

To these and other ends my invention consists in the construction, arrangement, and combination of parts to be hereinafter described, and particularly pointed out in the appended claims.

In the accompanying drawings, wherein like reference characters designate corresponding parts in the various views, Figure 1 is an enlarged perspective view of a ribbon spool and shaft and a ribbon-holding device embodying my invention, the latter being detached and elevated more particularly to show the relationship of the parts and the construction of the spool. Fig. 2 is a sectional view taken on the line *x x* of Fig. 3 and looking in the direction of the arrows in said figure. Fig. 3 is an end view of the device. Fig. 4 is an enlarged detail perspective view of a modified form of ribbon-retaining device made in accordance with my invention; and Fig. 5 is a cross-section showing the spool, ribbon, and the attaching device.

The ribbon-spool comprises a core 1 and flanges 2, that may be secured thereto in any suitable manner. The core is preferably formed with a longitudinal groove 3, and at the bottom of the groove are provided apertures 4. The flanges 2 of the spool are each provided with a groove 5, which extends at right angles from the groove 3 in the core to the perimeter of the flange.

6 is a detachable U-shaped ribbon-retaining device comprising a base 7 and side arms 8, which side arms are preferably resilient and extend at their free ends beyond the peripheries of the flanges when the parts are in the normal position, as illustrated in Figs. 2 and 3, so as to form finger-pieces $8^{\times}$ for the convenient manipulation of the contrivance. Each of the flanges 2 may be recessed at 2^{a} to facilitate grasping the terminals of the arms 8, so to avoid the necessity of unduly extending the arms for this purpose. These arms 8 are adapted to slide within the grooves or bearings 5 in the flanges, and each arm is provided with an engaging member or laterally-extending stud 9, which when the parts are in the positions represented in Fig. 2 cooperates with the engaging member or aperture 10 in the grooved portion of the flange, so as to maintain the ribbon-retaining device locked against movement when in the position shown in Fig. 2. The base-piece or cross-bar 7 of this retaining device may have a superposed strip 11 secured thereto by rivets 12, which terminate in pointed spurs or projections 13, that register with the apertures 4 in the core of the ribbon-spool. It should be understood that any suitable number of these spurs may be employed and that in so far as certain features of my invention are concerned the spurs may be omitted and the engagement of the base or cross-bar 7 (or 7^{a}) with the ribbon may be relied upon to secure the ribbon to the spool, or any suitable means may be employed wholly or partly upon the ribbon-retaining device for connecting the ribbon to the ribbon-spool, although the spurs or pins are preferred.

From an inspection of Figs. 3 and 5 it will be observed that the outer face of the cross-bar 11 is flush with the periphery of the core when the retaining device is in the locked position, so that the ribbon may be wound smoothly on the core. The ribbon-retaining device illustrated in Fig. 4 is made of a single strip of metal, the studs 9^{a}, the spurs

13ª, the cross-bar or base 7ª, and the arms 8ª all being formed integral.

It will be observed that it is merely necessary to press the resilient arms 8 toward each other in order to disengage the laterally-projecting studs 9 from the apertures 10 in the flanges of the ribbon-spool, whereupon the ribbon-retaining device may be withdrawn from the spool, as represented in Fig. 1, and the ribbon 14 disengaged. In order to connect one end of a fresh ribbon to the spool, it is merely necessary to lay a free end of the ribbon between the spool-flanges and across the groove 3 in the core and then force or slide bodily the ribbon-retaining device down into working position, as represented in Fig. 2. During this operation the resiliency of the spring-arms will force the laterally-projecting studs into the coöperating apertures 10 in the flanges and positively lock the ribbon-retaining device against movement with relation to the spool, and thus prevent the accidental withdrawal or disconnection of the ribbon from the spool. At the same time the spurs or pins 13 will pierce or impale the ribbon and engage the holes in the core, and thus so fasten the ribbon that no ordinary amount of tension thereon will operate to effect its release. The ribbon is further held against detachment by tensile strain, by friction, and the clamping action of the cross-bar on that portion of the ribbon which is forced into the groove 3 of the core.

It will be noted that the length of the cross-bar of the ribbon-holding device is equal to the length of the groove in the core, and hence that when the device is in position the side arms occupy the radial grooves in the flanges of the spool. Thus it will be seen that the ribbon-holding device is recessed within the spool and has no projecting portions to engage the coils of the ribbon or interfere with its proper and smooth winding.

The side arms have a natural outward tension, so that on the completion of the ribbon engaging or clamping movement and the release of said arms the lateral pins are enabled to spring into the registering holes in the spool-flanges. The extensions or finger-pieces of the side arms do not come in contact with the coils of the ribbon, being beyond the spool-flanges, and hence they are always clean and not liable to soil the fingers of the user in changing ribbons, as is the case with many ribbon-holding devices heretofore made.

While I have shown and described my preferred construction, it will be understood that various changes in the details thereof may be made without departing from the spirit of my invention.

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

1. The combination with a ribbon-spool, a ribbon-retaining device for securing one end of the ribbon to the spool, and fastening devices for positively engaging and locking the retaining device to and against movement on the flanges of the spool and securing it by such means in the engaged position.

2. The combination with a ribbon-spool having end flanges and an apertured core, of a detachable sliding ribbon-retaining device having a cross-bar with one or more spurs to engage the apertured portion of the core, and having side arms to engage said end flanges.

3. The combination with a ribbon-spool having an apertured core, of a detachable ribbon-retaining device having a cross-bar with one or more spurs to coöperate with said apertured portion, and fastening devices for positively locking the retaining device in working position.

4. The combination with a flanged ribbon-spool having bearings on the flanges thereof, of a U-shaped ribbon-retaining device that is free from pivotal connection with the spool and is adapted to slide bodily in bearings in the flanges of the spool toward the core thereof and to engage the ribbon and connect it to the ribbon-spool.

5. The combination with a flanged ribbon-spool, of a U-shaped retaining device that is adapted to slide bodily on the flanges of the spool toward the core thereof and engage the ribbon and connect it to the ribbon-spool, the side arms of the retaining device bearing against the flanges of the spool when the retaining device is in the operative position, and means for positively locking the retaining device in the ribbon-engaging position.

6. The combination with a flanged ribbon-spool, of a detachably U-shaped ribbon-retaining device having a spur, and a fastening device associated with the ribbon-retaining device, and a spool-flange for securing the ribbon-retaining device against movement to a flange of the ribbon-spool.

7. The combination with a ribbon-spool, of a detachable ribbon-retaining device adapted to connect the ribbon to the spool, and provided with one or more resilient arms, and means coöperating with said arm or arms to positively lock the retaining device in working position and secure it to the spool.

8. The combination with a flanged ribbon-spool, of a ribbon-retaining device adapted to connect the ribbon to the spool and provided with one or more resilient arms that extend beyond the flanges of the spool, and means coöperating with said arm or arms to lock the retaining device in working position.

9. The combination with a flanged ribbon-spool, of a ribbon-retaining device which is adapted to slide on the flanges of said spool and having resilient arms provided with engaging means that are adapted to coöperate with engaging means on the ribbon-spool flanges to lock the retaining device in engagement with the ribbon and with the spool.

10. The combination with a flanged ribbon-

spool, of a ribbon-retaining device having a cross-bar and side arms and which arms are resilient and adapted to engage the ribbon-spool and lock the retaining device in engagement with the ribbon and spool, and which arms are extended beyond the peripheries of the spool-flanges to enable the arms to be disengaged from the spool.

11. The combination with a flanged ribbon-spool, of a detachable U-shaped ribbon-retaining device which is adapted to slide on the flanges of the spool toward and away from the core thereof, the arms of said retaining device being resilient and provided with means for positively engaging the flanges of the spool when the said device is in engagement with the ribbon, and means on said device for engaging the ribbon and connecting it to the spool.

12. The combination with a flanged ribbon-spool having grooves in the flanges thereof, of a ribbon-retaining device adapted to be seated in said grooves, and means for locking the retaining device in the engaged position to connect the ribbon to the spool.

13. The combination with a ribbon-spool having grooved flanges and apertured core, of a U-shaped retaining device having a spur or spurs adapted to be seated in the apertured portion of the spool-core, and also resilient arms carrying means adapted to engage with coöperating means on the spool-flanges to lock the retaining device in the ribbon-holding position.

14. The combination with a ribbon-spool having flanges which are grooved and apertured, and a core which is apertured, of a detachable U-shaped ribbon-retaining device, the arms of which are resilient and adapted to be seated in said grooves in the flanges of the spool, each of said arms being provided with a laterally-extending stud that is adapted to engage with one of said apertures in the spool-flanges, and the cross-bar of said retaining device having a spur or spurs to engage the aptured portion of the core.

15. The combination with a flanged ribbon-spool having a core provided with a longitudinal groove, of a detachable U-shaped ribbon-holder whose cross-bar is adapted to hold the ribbon within said groove and whose side arms are detachably engaged with the flanges of said spool.

16. The combination with a flanged ribbon-spool having a core which is provided with a longitudinal and apertured groove, of a ribbon-retaining device comprising a cross-bar having a spur or spurs and adapted to be seated within said longitudinal groove and to hold the ribbon therein and having also resilient side arms provided with means for detachably engaging the flanges of the spool.

17. The combination of a ribbon-spool comprising a longitudinally-grooved core and end flanges having radial grooves, of a U-shaped ribbon-retaining device, the side arms of which occupy the grooves in the flanges and the cross-bar of which occupies the groove in the core.

18. The combination of a ribbon-spool consisting of a longitudinally-grooved and apertured core and end flanges which are radially grooved and apertured, of a ribbon-retaining device consisting of a cross-bar having a spur or spurs and adapted to said longitudinal groove in the core, and also of integral resilient side arms adapted to fit the radial grooves in the spool-flanges and provided with engaging members adapted to engage the apertures in said flanges.

19. The combination of a ribbon-spool having flanges at its ends, of a detachable ribbon-holding device comprising a cross-bar and side arms, and means for positively and detachably engaging said arms with the flanges of the spool in order to secure the ribbon-holding device in the operative position by locking it against movement to the flanges of the spool and to afford a detachment of the device when desired.

20. The combination with a ribbon-spool having end flanges, of a detachable U-shaped ribbon-holder, the side arms of which have a normal tension toward the flanges, and means on said arms and flanges for positively and detachably fastening the ribbon-holding device against movement to the spool in order to positively lock the ribbon-holder in operative position and to afford a removal thereof when desired.

21. The combination with a flanged ribbon-spool, of a detachable ribbon-holding device having a finger-piece carried thereby and extending beyond the flange of the spool when the parts are in the normal positions.

22. The combination with a flanged ribbon-spool, of a U-shaped detachable ribbon-holder, having its side arms extending beyond the peripheries of the spool-flanges and to form finger-pieces for the holder.

23. The combination of a ribbon-spool having flanges which are cut away or notched at their peripheries, and a ribbon-holder having side arms registering with said cutaways or notches.

24. The combination of a ribbon-spool having a grooved core and grooved flanges, and a U-shaped ribbon-holder recessed in said grooved core and grooved flanges.

Signed at Jacksonville, in the county of Morgan and State of Illinois, this 19th day of March, A. D. 1902.

EDWIN L. FOSTER.

Witnesses:
H. W. HITT,
A. J. HAYDEN.