

Nov. 1, 1949.

H. J. HART

2,486,473

TYPEWRITER RIBBON AND SPOOL

Filed Feb. 26, 1946

2 Sheets-Sheet 1

Fig. 1.

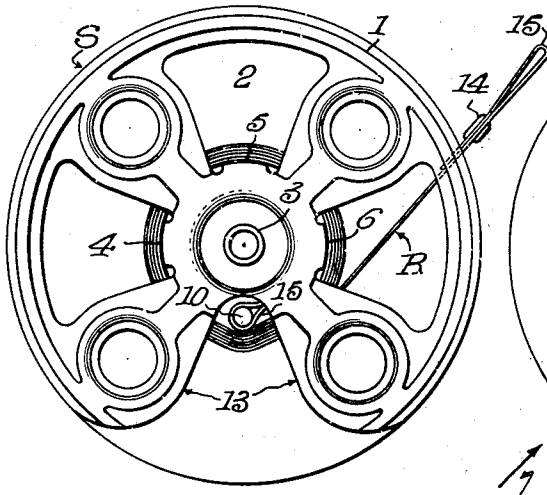


Fig. 2.

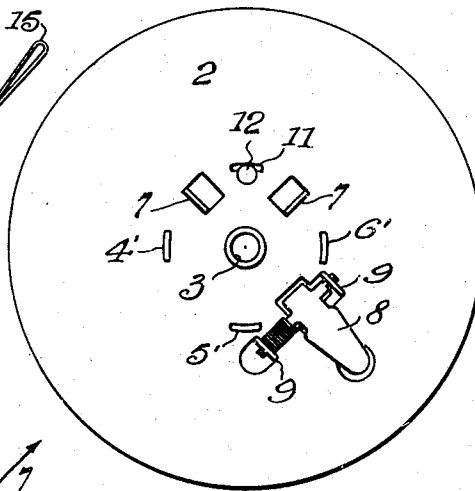


Fig. 3.

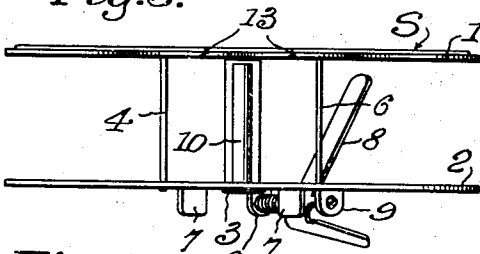


Fig. 5.

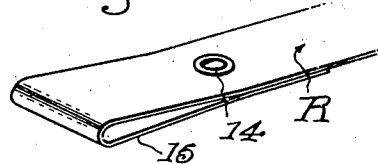


Fig. 4.

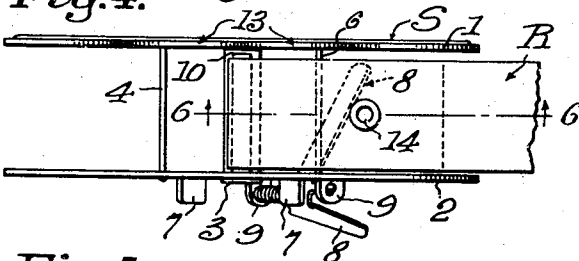


Fig. 6.

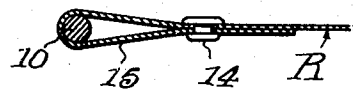
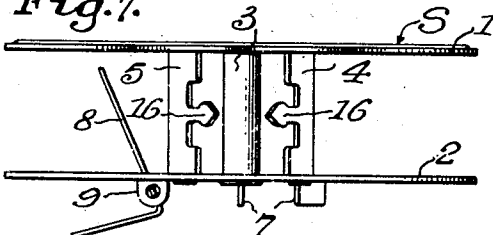


Fig. 7.



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Fig. 8.

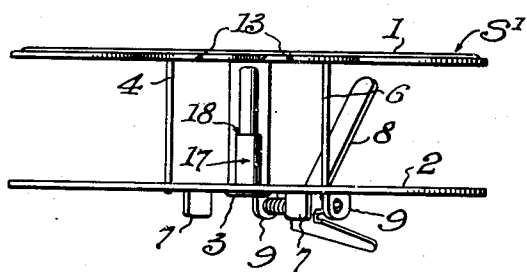


Fig. 9.

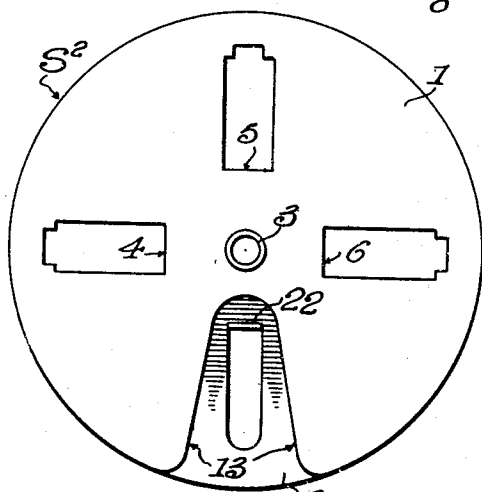
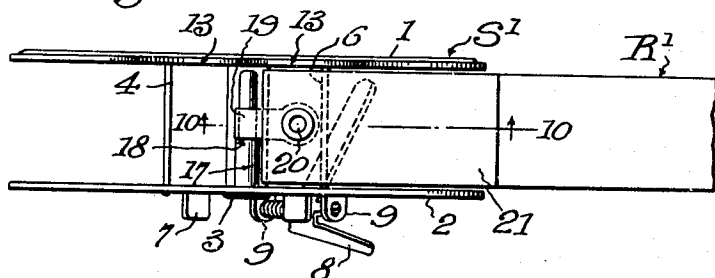


Fig. 11.

Fig. 10.

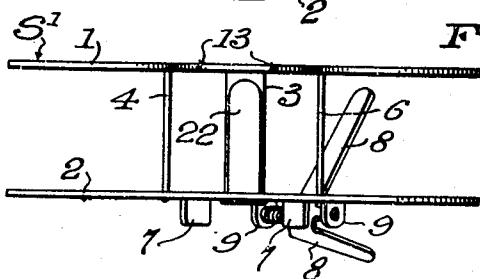
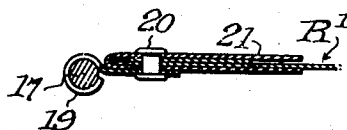


Fig. 12.

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TYPEWRITER RIBBON AND SPOOL

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Application February 26, 1946, Serial No. 650,200

7 Claims. (Cl. 242-74)

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This invention relates to typewriter ribbons and spools, and more particularly to an arrangement for detachably connecting the end of a typewriter ribbon to a ribbon spool.

An object of the invention is to provide an improved typewriter ribbon and spool assembly in which the ribbon and the spool are formed or provided with cooperating connecting parts enabling the ribbon easily to be attached to or detached from the spool.

Another object of the invention is to provide an arrangement of the class referred to in which the ribbon and spool can be attached together or detached from each other with a minimum likelihood of soiling the operator's fingers.

Another object of the invention is to provide a construction of the kind stated in which the connecting parts serve not only to attach the ribbon to the spool but also serve as a gauge to centralize the ribbon with respect to the spool flanges.

Another object of the invention is to provide a new and improved ribbon spool having an attaching part or means adapted to cooperate with a typewriter ribbon end in the manner indicated generally above.

A further object of the invention is to provide a new and improved typewriter ribbon formed or provided at its end with an attaching loop adapted to cooperate with attaching means on a typewriter ribbon spool of the kind referred to above.

Other objects of the invention will become apparent from a reading of the following description, the appended claims, and the accompanying drawings, in which:

Figure 1 is a top plan view of one form of typewriter ribbon and spool assembly embodying the invention;

Figure 2 is a bottom plan view of the spool shown in Figure 1;

Figure 3 is a side elevation of the spool shown in Figures 1 and 2, the ribbon not being shown in Figure 3;

Figure 4 is a view similar to Figure 3, but showing the end portion of a ribbon attached to the spool;

Figure 5 is a perspective view of the end portion of the ribbon formed with attaching means in accordance with the invention;

Figure 6 is a fragmentary section on the line 6-6 of Figure 4, and showing only the ribbon end portion and an attaching post on the spool;

Figure 7 is an elevation of the spool shown in Figures 1 to 4, as seen when looking in the direction of the arrow 7 in Figure 2;

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Figure 8 is an elevation of another form of spool embodying the invention;

Figure 9 is a view similar to Figure 8, but showing additionally the end portion of a ribbon and an attaching loop thereon connected to an attaching part on the spool;

Figure 10 is a fragmentary section on the line 10-10 of Figure 9 and showing only the ribbon end portion, an attaching loop thereon, and an anchoring post on the spool;

Figure 11 is a top plan view of still another form of spool embodying the invention; and

Figure 12 is an elevation of the spool shown in Figure 11.

In the illustrative embodiment of the invention shown in Figures 1 to 7, a ribbon R has its end anchored to and is wound upon a spool S.

The spool S comprises upper and lower flanges 1 and 2 connected in mutually spaced relationship by a hub structure comprising a central sleeve 3 and connecting arms 4, 5 and 6 which are formed integrally with the top flange 1 and are bent out of the plane thereof with their bottom ends projecting through slits in the bottom flange 2, and being peened over as at 4', 5' and 6'. The sleeve 3 is adapted to fit over a shaft or spindle (not shown) which may either be stationary or may be driven in time with movement of other typewriter parts for turning the spool to wind the ribbon. Lugs 7, bent down from the bottom flange 2, are adapted to be engaged by driving teeth or similar means on or associated with the shaft or spindle (not shown) for causing the spool to turn with the shaft or spindle. A spring urged trigger 8 is mounted on ears 9-9 on the bottom flange 2 and is adapted to be released when the ribbon has been unwound from the spool for automatically reversing the ribbon spool driving mechanism (not shown). As thus far described, the spool S is generally similar to ribbon spools of well known construction used as standard equipment on the Royal typewriter and it will be understood that the structure already referred to does not, per se, constitute the invention.

As previously stated, the invention relates more particularly to means for detachably connecting or anchoring the end of the ribbon to the spool. In the embodiment shown in Figures 1 to 7, an anchoring post 10 is made fast to the bottom flange 2 as by extending one end portion of the post 10 through a slit 11 in the flange 2 and then peening the post end as at 12. Only this peened end of the post 10 is secured to the spool, the post extending parallel to the spool axis toward the top flange 1. Just above the post 10, the top flange

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1 is formed with an opening 13 which extends from the periphery of the flange toward the center of the spool and over the free or upper end of the post 10. Thus, the free end of the post is exposed and unobstructed so as to be accessible from directly outside of or above the flange 1.

The ribbon R has its end return folded and secured by a suitable fastening device, such as a rivet 14, to form an attaching loop 15 as shown most clearly in Figures 5 and 6. In order to connect the ribbon to the spool, the loop 15 is simply slip-fitted over the anchoring post 10 as shown in Figure 4, the ribbon may then be wound on the spool in the usual manner, as shown in Figure 3. The fitting of the loop 15 over the post 3 is greatly facilitated by the clearance provided by the opening 13 in the flange 1 which enables the loop 15 to be moved directly from outside the flange 1 right in line with the post 10 without its being necessary for the operator's fingers to be inserted between the flanges 1 and 2. Obviously, removal of the ribbon from the spool is just as easy.

If desired, the spool may be formed with conventional spear heads 16-16 as shown in Figure 7 for anchoring the end of a conventional ribbon in the usual way if a ribbon with attaching loop means is not available.

In the embodiment shown in Figures 8, 9, and 10, the structure of the spool S¹ is similar to the structure described with reference to Figures 1 to 7, with the exception that the anchoring post 17 is formed with a reduced upper end portion providing a shoulder 18 intermediate the flanges 1 and 2.

The end of the ribbon R¹ is provided with an attaching loop 19 of relatively firm material, such as sheet metal, which is attached to the ribbon by suitable fastening means such as a rivet 20. If desired, a piece 21 of clean, non-inked paper or fabric may be attached to the ribbon end as shown in Figure 10 for preventing soiling of the operator's fingers when the ribbon is being handled.

When the attaching loop is slipped over the reduced upper end of the anchoring post 17 and moved down into abutting engagement with the shoulder 18, the ribbon will be positioned definitely in a predetermined location with respect to the flanges 1 and 2. As shown in Figure 9, the shoulder 18 and attaching loop 19 cooperate to position the ribbon midway between the flanges 1 and 2, the opposite edges of the ribbon being spaced substantially equidistantly from the respectively adjacent spool flanges.

The modified form of spool S² shown in Figures 11 and 12 is similar to the spool S previously described, but differs therefrom in that the anchoring post 22 is formed as a part integral with the bottom flange 2 and is bent out of the plane of the flange to extend parallel to the spool axis.

In each of the representative embodiments of the invention disclosed in the drawings, the anchoring post and the connecting arms are spaced radially from the center of the spool assembly, and are circumferentially deployed so as together to constitute a ribbon-winding core.

The constructions and arrangements shown embody the invention in preferred forms, but it will be understood that changes may be made without departing from the invention as defined in the claims.

I claim:

1. In a typewriter ribbon and spool assembly, a spool comprising a flange, a hub structure, an anchoring post fast at one of its ends with said flange and extending therefrom substantially

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parallel to the spool axis, the other end of said post being free, unobstructed, and exposed, and a shoulder on said post; a ribbon; and an anchoring loop of relatively firm material secured to an end of said ribbon and being slip-fitted over said post and abutting said shoulder for locating said ribbon end in proper position with respect to said flange.

2. In a typewriter ribbon and spool assembly, a spool comprising two flanges, a central hub structure connecting said flanges in mutually spaced relationship, an anchoring post fast with one only of said flanges and extending toward the other of said flanges, a shoulder on said post; a ribbon; and an anchoring loop of relatively firm material secured to an end of said ribbon and being slip-fitted over said post and abutting said shoulder for positioning the ribbon end portion with its opposite edges spaced from said flanges respectively.

3. In a typewriter ribbon spool, a flange; a central hub structure; means for mounting said spool on typewriter mechanism; an anchoring post fast at one of its ends with said flange and extending therefrom substantially parallel to the spool axis, the other end of said post being free, unobstructed, and exposed to receive an attaching loop at the end of a typewriter ribbon; and a shoulder on said post intermediate the ends of said post and of larger diameter than said upper end of said post, said shoulder being adapted to cooperate with such an attaching loop for positioning the ribbon end relatively to said flange.

4. In a typewriter ribbon and spool assembly, a spool comprising two flanges, a central hub structure connecting said flanges in mutually spaced relationship, an anchoring post fast at one of its ends with one only of said flanges and extending toward the other of said flanges, said other of said flanges being formed to provide an opening extending from the flange periphery inwardly toward the spool center and beyond said anchoring post to thereby leave the other end of said anchoring post exposed, and a shoulder on said anchoring post; a ribbon; and an attaching loop of relatively firm material secured to an end of said ribbon and slip-fitted over said post and abutting said shoulder for locating the ribbon edges in relation to the spool flanges.

5. In a typewriter ribbon spool, two flanges, a central hub structure connecting said flanges in mutually spaced relationship, an anchoring post fast at one of its ends with one only of said flanges and extending toward the other of said flanges, said other of said flanges being formed to provide an opening extending from the flange periphery inwardly toward the spool center and beyond said anchoring post to thereby leave the other end of said anchoring post free, unobstructed, and exposed to receive an attaching loop of relatively firm material secured to an end of a typewriter ribbon, and a shoulder on said anchoring post intermediate the ends of said post and being adapted to cooperate with such an attaching loop for positioning the ribbon end relatively to the spool flanges.

6. In a typewriter ribbon spool, two flanges, a central hub structure connecting said flanges in mutually spaced relationship and including a plurality of circumferentially spaced connecting arms respectively formed integrally with one of said flanges and extending substantially perpendicularly thereto and having their ends connected to the other of said flanges, an anchoring post formed integrally at one end with one of said

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flanges and extending toward the other of said flanges, the latter flange being provided with an opening extending from its periphery inwardly toward the spool center and over said anchoring post to thereby leave the other end of said anchoring post free, unobstructed, and exposed to receive an attaching loop at the end of a typewriter ribbon.

7. In a typewriter ribbon spool, two sheet metal flanges, a central hub structure connecting said flanges in mutually spaced relationship and including a plurality of circumferentially spaced connecting arms respectively formed integrally with one of said flanges and bent out of the plane thereof to extend substantially perpendicularly thereto and having their ends connected to the other of said flanges, an anchoring post formed integrally at one end with one of said flanges and bent out of the plane thereof to extend toward the other of said flanges, the latter flange being provided with an opening extending from its periphery inwardly toward the spool center and over said anchoring post to thereby leave the other end of said anchoring post free, unobstructed, and exposed to receive an attaching

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loop at the end of a typewriter ribbon, said anchoring post and said connecting arms being spaced radially from the center of said spool and being circumferentially deployed so as together to constitute a ribbon winding core, said two flanges and said winding core, including said anchoring post, being formed out of only two pieces of sheet metal.

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