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(Under International Convention.)

Date claimed for Patent under Patents and Designs Act, 1907, being date of first Foreign Application (in the United States), } 22nd Dec., 1913

Date of Application (in the United Kingdom), 22nd Aug., 1914

At the expiration of twelve months from the date of the first Foreign Application, the provision of Section 91 (3) (a) of the Patents and Designs Act, 1907, as to inspection of Specification, became operative

Accepted, 8th July, 1915

### COMPLETE SPECIFICATION.

#### Ribbon Mechanism for Typewriters.

I, THERON LORENZO KNAPP, Mechanician, 217, Jefferson Street, City of Woodstock, County of McHenry, State of Illinois, United States of America, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

This invention relates to ribbon mechanism for typewriting machines, and more especially to an inking ribbon spool which is of simple and inexpensive construction and adapted for the attachment thereto of an inking ribbon, and to enable connected ribbons and spools ready for use to be handled or transported in commercial quantities, and removably mounted and removed or renewed with great facility.

The invention consists in the matters hereinafter set forth and pointed out in the appended claims.

In the accompanying drawings

Figure 1 is a view in elevation of a ribbon mechanism constructed in accordance with my invention and improvements, showing my improved inking-ribbon spool operatively connected with an upright spindle or shaft of a typewriting machine, and enclosed within a stationary casing or container having a slot in its peripheral wall for permitting an inking-ribbon to pass therethrough;

Figure 2, a horizontal sectional view, taken on line 2 of Figure 1, looking in the direction of the arrow, and showing the relative positions of the angular peripheral portions of the spool and hub or spool support and the spring finger for securing the ribbon to the ribbon spool;

Figure 3, a detail view in central vertical section, showing the hub or spool-supporting member and the manner of securing the same to the shaft or spindle;

Figure 4, a top view of a blank cut or stamped from sheet metal and adapted to form the outer member of my improved ribbon spool;

Figure 5, a similar view of a blank cut or stamped from sheet metal and adapted to form the inner member of spring finger for securing the ribbon to the spool;

[Price 6d.]



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Figure 6, a detail view in central vertical section of my improved ribbon spool, showing the inner and outer members, formed from the blanks shown in Figures 4 and 5, assembled;

Figure 7, a horizontal sectional view in detail of the parts shown in Figure 6;

Figure 8, a detail view in side elevation of the inner member of the ribbon spool which is formed from a blank such as that shown in Figure 5; and

Figure 9, a bottom view of the inner spool member shown in Figure 8.

A ribbon mechanism for typewriters made in accordance with the present invention embraces an outer or main spool member *a* which, in the most desirable form of my invention, is formed of sheet metal. To make a spool such as that shown in the drawings, a blank *a*<sup>1</sup> is cut or stamped from sheet metal, (see Figure 4), so as to form a central disc shaped web or head portion *b* having a central aperture *c* therein. The blank *a*<sup>1</sup> has radially extending or projecting arms *d*, *d*<sup>1</sup>, *e* and *e*, the arms *e*, *e*, being provided with apertures *f*. This blank is bent into the form shown in Figures 6 and 7, so that each of the radial arms *d*, *d*<sup>1</sup>, *e* and *e* extends at right angles to and is connected at one end with the periphery of the head *b* and in parallel relation to the axis of rotation of the spool, so as to form the drum, or portion of the spool upon which the inking-ribbon is wound.

A blank *g* is cut or stamped from elastic or resilient sheet metal, so as to form a central disc-like body or web portion *h* having a central aperture *i* and having integral, laterally projecting tongues or fingers *k*, *l*, *m*, *m*, (see Figure 5). This blank is stamped or bent into the form shown in Figures 8 and 9 and fitted into the outer spool member shown in Figures 4 and 6, in such a manner that the fingers *m*, *m* extend into the apertures *f* in the arms *e*, *e*, the tongue *l* being in such position that its outer surface fits snugly against the inner surface of the corresponding or adjacent arm *d*<sup>1</sup> of the outer spool member, so as to co-act with the other arms to hold the inner member of the spool in position in the outer spool member. The spring tongue or finger *k* is bent into position to extend on the inside of the adjacent arm *d*<sup>1</sup> of the outer spool member located opposite the tongue *l*, so as to admit the end of an inking-ribbon *j* between the spring finger *k* and the part *d*<sup>1</sup> and exert a yielding outward pressure against the ribbon, which is thus removably held between said parts *k* and *d*<sup>1</sup>.

The arms *d* *d*<sup>1</sup> *e* *e* not only form the portion of the spool upon which the ribbon is wound, but they also form with the parts *k* *l* *m* *m* of the inner spool member the sides of a hexagonal figure. To the end 6 of the spindle or ribbon-driving shaft 5 (see Figure 3) is attached a hub or thimble 3 having a disc-shaped central perforated head or end web portion 4 from which depend a number of arms 2 also forming the sides of a hexagonal figure. The hub 3 may be made by providing a blank somewhat similar to that shown in Figure 4 and bending the radial strips or arms 2 thereof. It will be seen that the complete spool member comprising its inner and outer parts is practically of hexagonal formation, and that the hub is similarly shaped. The spool member is, however, made somewhat larger than the hub so that it can be slipped on to the latter easily and in any relative position. In practice, therefore, there will be a loose fit allowing some play between the hub and the spool member, so that the same will not necessarily engage in the exact manner shown in Figure 8. The angular formation of the two parts, however, prevents their relative rotary movement. The spool is thus adapted to be removed and replaced or renewed together with an attached ribbon with facility and without disconnecting the ribbon from its accompanying attached spool. The hub or thimble 3 and the spool may, if desired, be of any polygonal formation other than the hexagonal form herein shown and described.

A non-rotatable casing or ribbon container 7 having a preferably circular peripheral wall 8, bottom 9, and removable top or cover 10, is secured in fixed relation to a stationary or fixed frame portion 11 of a typewriting machine by means of screws 12, or other suitable securing means (see Figure 1). The

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bottom of the container or casing is provided with an axial opening 13 through which extends the spindle or ribbon driving shaft 5. The hub or spool-supporting member and the removable spool supported thereby are rotatably mounted on the inside of the non-rotatable casing or ribbon container, and  
5 between the top wall 10 and the stationary bottom wall of the container, in such position that these stationary parallel top and bottom walls or plates 9 and 10 serve to hold or guide the ribbon wound upon or unwound from the spool in such a manner as to enable lateral or peripheral flanges, such as are commonly required upon inking-ribbon spools, to be dispensed with. The peripheral wall 8  
10 of the container or stationary casing is provided with a vertical slot 14 through which the ribbon extends when in operation or in operative position upon a typewriting machine.

The spindle 5 is mounted in suitable bearings 16, 17 and 18 in the main frame of a typewriter and is provided with suitable driving mechanism which  
15 may comprise a worm wheel 19 fixed to the shaft or spindle and a worm 20 in toothed engagement with such worm wheel and operatively connected with a suitable source of power or driving mechanism.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what  
20 I claim is:—

1. A typewriter or like ribbon mechanism comprising a ribbon spool having ribbon-engaging peripheral portions connected with one another at one end of the spool, the other end being open to receive a supporting member with which the spool non-rotatively but removably engages, substantially as described.

25 2. A ribbon mechanism according to Claim 1, in which the spool is formed with a head from which depend a plurality of integral arms giving said spool a formation substantially polygonal in character, the supporting member therefor having a similar formation, substantially as described.

30 3. A ribbon mechanism according to Claims 1 and 2 in which the ribbon is secured to the spool by a flexible clamping member thereon, substantially as described.

4. A ribbon mechanism according to Claims 2 and 3 in which a plate is located in contact with the inner face of the spool head and has depending from it a plurality of integral arms, at least one of which has an interlocking engagement  
35 with the spool for holding the plate in place while another of said arms extends along the inner face of one of the spool arms to form therewith a ribbon clamp, substantially as described.

5. A ribbon mechanism according to any of the preceding claims in which the spool is located between stationary ribbon-guiding plates extending laterally  
40 beyond the periphery thereof, one of said plates being adapted to engage and to prevent displacement of the spool with respect to its supporting member, substantially as described.

6. A typewriter or like ribbon mechanism substantially as and for the purposes described with reference to the accompanying drawings.

45 Dated this 21st day of August, 1914.

MARKS & CLERK.

[This Drawing is a reproduction of the Original on a reduced scale.]

