Jan. 19, 1937. C. GABRIELSON 2,068,269

TYPEWRITING MACHINE

Filed July 22, 1935

Fig. 1.

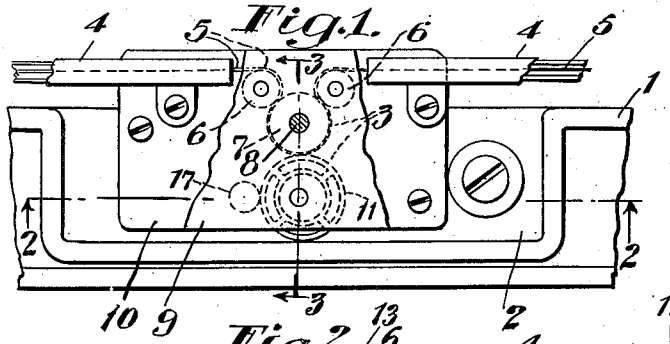


Fig. 2.

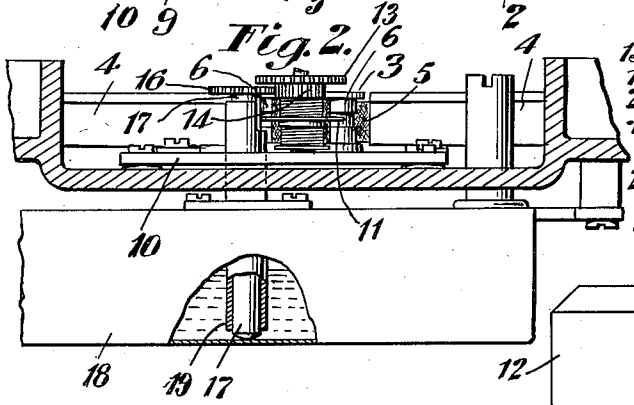


Fig. 3.

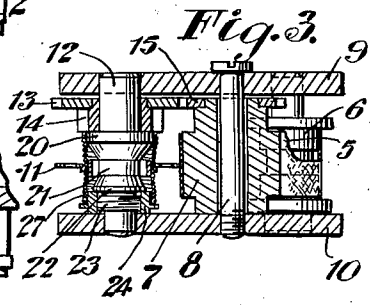


Fig. 4.

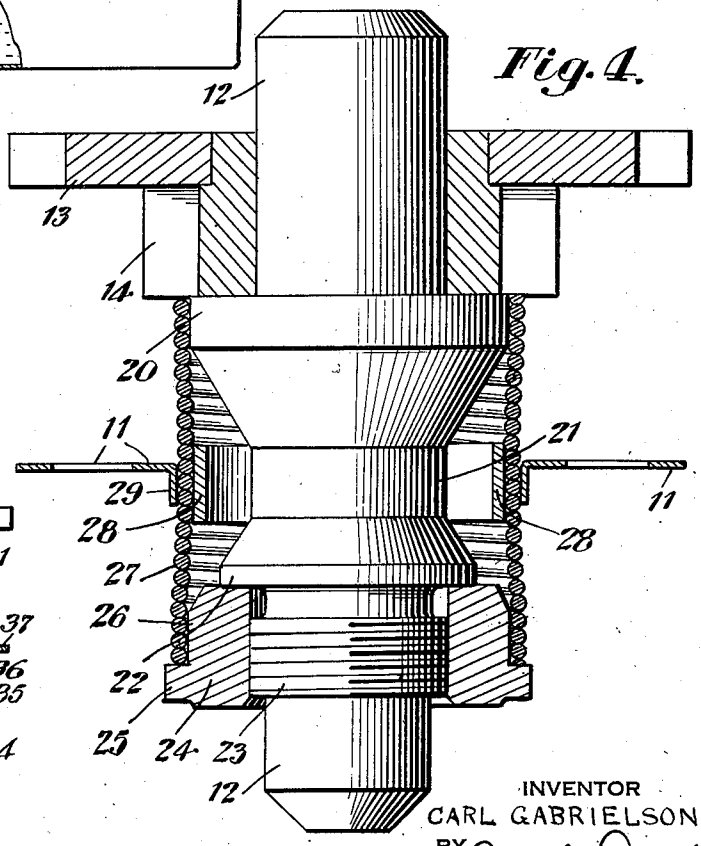
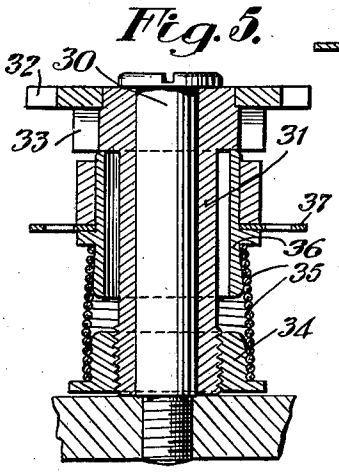


Fig. 5.



INVENTOR
CARL GABRIELSON
BY Dominion Davis
ATTORNEYS

Patented Jan. 19, 1937 2,068,269

UNITED STATES PATENT OFFICE

2,068,269

TYPEWRITING MACHINE

Carl Gabrielson, Syracuse, N. Y., assignor to L. C. Smith & Corona Typewriters, Inc., Syracuse, N. Y., a corporation of New York

Application July 22, 1935, Serial No. 32,478

16 Claims. (Cl. 197—171)

This invention relates to improvements in means for inking ribbons used in machines for making type impressions, and relates particularly to improvements in that type of ribbon inking means disclosed in my Patent No. 1,967,709, dated July 24, 1934.

One of the important objects of the invention is to provide an improved and efficient yieldable and resilient mounting for the ink-applying wheel. Other objects and advantages of the invention will appear from the following description of an embodiment thereof.

In the drawing Fig. 1 is a plan view of the inking device mounted on the front cross bar of a typewriting machine;

Fig. 2 is a sectional view of the cross bar of a typewriting machine taken on the line 2—2 of Fig. 1 and showing the inking device in front elevation;

Fig. 3 is a transverse sectional view of the inking device taken substantially on the line 3—3 of Fig. 1;

Fig. 4 is a vertical sectional view of the ink applying wheel and its mounting, the shaft of the inking device being shown in side elevation; and

Fig. 5 is a detail sectional view of a modified form of the mounting for the ink applying disk.

Referring to the various parts by reference characters 1 designates the front cross bar of a typewriting machine which is provided with a well or depression 2. Within this depression is mounted the ink applying mechanism 3. On the frame of the ink applying mechanism are mounted guides 4 through which the ribbon 5 passes to and from the inking means. The ribbon 5 is an ink carrier or ink transfer ribbon, as shown in my aforesaid Patent No. 1,967,709. As fully shown and described in said patent the ink transfer ribbon is attached at its ends to the writing ribbon and is wound up on the ribbon spools and unwound therefrom by the ribbon feeding means, the printing ribbon and the transfer ribbon being reeled first on one spool and then on the other spool.

In the frame of the inking mechanism are mounted two idle guide rollers 6. These rollers are located adjacent the inner ends of the guides and are spaced a suitable distance apart. Immediately forward of the two guide rollers is a larger ribbon driven pulley 7. This pulley rotates on a vertical stud 8 which is rigidly fixed in the upper and lower plates 9 and 10 of the frame which supports the inking mechanism. The pulley 7 is loosely mounted on the stud 8 (Figure 3) to permit it to have a slight sidewise movement with respect to the stud. The ribbon passes around the idle guide rollers 6 and then around the pulley 7 as indicated in Fig. 1 so that said ribbon has sufficient tractive effect upon the pulley to drive the ink applying mechanism. The pulley will yield slightly under the pull of the ribbon and has a tendency to slightly bind the ribbon between the pulley surface and the co-operating surface of the idle guide rollers.

An ink applying disk 11 is carried by a vertical shaft 12 which is journalled at its lower and upper ends in the plates 9 and 10 of the frame of the inking mechanism. Secured to the shaft 12 near its upper end are two gears 13 and 14. Gear 13 meshes with a gear 15 mounted on the upper end of the ribbon pulley 7. The gear 14 meshes with the gear 16 mounted upon the upper end of an ink lifting roller 17. The lower end of this roller extends down into an ink reservoir 18 secured to the under side of the cross bar of the machine frame and is surrounded by a co-operating tube 19, as described in my aforesaid patent. The rotation of the pulley 7 results in the rotation of the ink applying disk and of the ink lifting roller 17. The ink applying disk is of such diameter and is so located with respect to the pulley 7 and the ink lifting roller 17 that it lightly contacts the ink lifting roller and the ribbon as it passes around the pulley 7.

The shaft 12 of the ink applying disk is formed with an enlarged shoulder 20 directly below the gear 14. Below this shoulder 20 the shaft is reduced in diameter as at 21 and at the lower end of this reduced portion a shoulder 22 is formed, this latter shoulder being smaller in diameter than the shoulder 20. Below the shoulder 22 the shaft is reduced in diameter and formed with a threaded portion 23. On this threaded portion is screwed a ring 24 whose upper end abuts against the lower side of the shoulder 22. The ring 24 is formed with an external annular shoulder 25 near its lower end, the said ring above said shoulder being of substantially the same diameter as the shoulder 20, as shown at 26. Surrounding the shaft 12, with its upper end abutting the under face of gear 14 and its lower end abutting the upper face of shoulder 25, is a coil spring 27 which has its upper and lower end portions secured respectively to the shoulder 20 and to the portion 26 of ring 24 for rotation of the spring with the shaft. The spring 27 forms a laterally yieldable resilient spring coupling surrounding a portion of the shaft 12. Between the portions 20 and 26 the coupling is unsupported and is therefore flexible

and resilient and may be given a slight lateral or sidewise movement under pressure but will normally remain concentric to the shaft 12. Within the spring 27, midway between the ends thereof, is a ring 28 which is secured to the inner surface of several of the coils of the spring to turn with the spring. To the exterior of those coils of the spring which are secured to the ring 28 there is secured to turn with the spring an ink applying disk 11, said disk being formed with a depending annular flange 29 which is secured to the exterior of the spring where said spring is backed up by the interior of the ring 28.

It is manifest that the shaft 12 will be held against lateral or sidewise movement in its bearings in the upper and lower plates of the supporting frame and that the ink applying disk will be flexibly supported on the said shaft in such manner as to permit of a slight lateral motion to compensate for inequalities in the ribbon passing around the ribbon pulley. The spring mounting of the ink applying disk also ensures a light yielding pressure between the ink applying disk and the ribbon. The loose mounting of the pulley contributes to this operation. In order that the ink applying disk will bear against the ink lifting roller 17 with a slight pressure the distance between the axial center of the shaft of the ink applying disk and the surface of the ink lifting roller is slightly less than the radius of the ink applying disk. The result of this is that the ink applying disk will be forced slightly eccentric to the axis of its shaft, the coil spring flexing slightly to permit this slight lateral displacement of the ink applying disk.

In the modification illustrated in Fig. 5, an upstanding stud 30 is rigidly mounted in the frame of the mechanism. On this stud is rotatably mounted a sleeve 31 and to the upper end of this sleeve is secured a gear 32 which is adapted to mesh with a gear on the ribbon driven pulley, and with a gear 33 which is adapted to mesh with the gear on the ink lifting roller. On the lower end of the sleeve is rigidly secured a collar 34 and to this collar is secured an upstanding coil spring 35 so that the spring will rotate with the sleeve. To the upper end of the spring is rigidly secured a sleeve 36 which carries the ink applying disk 37. The internal diameter of the sleeve 36 is slightly greater than the external diameter of the sleeve 31 so that said sleeve 36 may have a slight lateral play, or sidewise movement on the sleeve. It is manifest that the ink applying disk will normally be held concentric to the axis of the stud 30 but may yield slightly under pressure, the stud forming a flexible and resilient support for the ink applying disk.

What I claim is:

1. A ribbon inking device comprising an ink reservoir, an ink lifting means extending into said reservoir, a rotary ink transfer disk for transferring ink from the upper end of the ink lifting means to a ribbon to be inked, a rotatively supported vertical shaft for said disk, a coil spring surrounding a portion of said shaft and secured thereto at its ends to turn therewith, means for attaching the ink transfer disk to said spring substantially midway its ends, said shaft being out of contact with the said coil spring at the point of attachment between the coil spring and said disk whereby the disk and the coil spring may be moved laterally or sidewise with respect to the axis of said shaft and the said spring will tend to return said disk to a concentric position with respect to the axis of said shaft, said shaft being located with respect to the ink lifting means to maintain the said disk in yielding contact with the ink lifting device.

2. A ribbon inking device comprising an ink reservoir, an ink lifting means extending into said reservoir, a rotary ink transfer disk for transferring ink from the upper end of the ink lifting means to a ribbon to be inked, a rotatively supported vertical shaft for said disk, a coil spring surrounding and concentric to a portion of said shaft and secured at its ends to rotate therewith, means for attaching the ink transfer disk to said spring substantially midway its ends, said shaft being out of contact with the said coil spring at the point of attachment between the coil spring and said disk whereby the disk and the coil spring may be moved laterally or sidewise with respect to the axis of said shaft and the said spring will tend to return said disk to a concentric position with respect to the axis of said shaft.

3. A ribbon inking device comprising an ink reservoir, an ink lifting means extending into said reservoir, an ink applying disk to transfer ink from the ink lifting means to a ribbon to be inked, a rotatively supported vertical shaft for said ink applying disk, a coil spring surrounding a portion of said shaft normally concentric therewith and having its ends secured to said shaft to rotate therewith, said spring being out of contact with the shaft at a point between its ends to permit it to be flexed laterally with respect to the axis of the shaft, means for attaching the ink applying disk to said spring at a point where said spring is free of the shaft, a pulley over which the ribbon to be inked is adapted to pass, the shaft of the ink applying disk being so located with respect to the ribbon driven pulley and the ink lifting means as to cause the ink applying disk to yieldingly engage the ink lifting means and the ribbon as the ribbon passes around the said pulley.

4. A ribbon inking device comprising an ink reservoir, an ink lifting means extending into said reservoir, an ink applying disk to transfer ink from the ink lifting means to a ribbon to be inked, a rotatively supported vertical shaft for said ink applying disk, a coil spring surrounding a portion of said shaft normally concentric therewith and having its ends secured to said shaft to rotate therewith, said spring being out of contact with the shaft at a point between its ends to permit it to be flexed laterally with respect to the axis of the shaft, means for attaching the ink applying disk to said spring at a point where said spring is free of the connection to the shaft, a ribbon driven pulley over which the ribbon to be inked is adapted to pass, the shaft of the ink applying disk being so located with respect to the ribbon driven pulley and the ink lifting means as to cause the ink applying disk to engage the ink lifting means and the ribbon as the ribbon passes around the said pulley.

5. A ribbon inking device comprising an ink reservoir, an ink lifting means extending into said reservoir, an ink applying disk to transfer ink from the ink lifting means to a ribbon to be inked, a rotatively supported vertical shaft for said ink applying disk, a coil spring surrounding a portion of said shaft normally concentric therewith and having its ends secured to said shaft to rotate therewith, said spring being out of contact with the shaft at a point between its ends to permit it to be flexed laterally with respect to the axis of the shaft, means for attaching the

ink applying disk to said spring at a point where said spring is free of the connection to the shaft, a ribbon driven pulley over which the ribbon to be inked is adapted to pass, the shaft of the ink applying disk being so located with respect to the ribbon driven pulley and the ink lifting means as to cause the ink applying disk to engage the ink lifting means and the ribbon as the ribbon passes around the said pulley, and means to permit the pulley to have a slight lateral movement toward and from the ink applying disk.

6. A ribbon inking device comprising an ink reservoir, an ink lifting means extending into said reservoir, an ink applying disk to transfer ink from the ink lifting means to a ribbon to be inked, a rotatively supported vertical shaft for said ink applying disk, a coil spring surrounding a portion of said shaft normally concentric therewith and having its ends secured to said shaft to rotate therewith, said spring being out of contact with the shaft at a point between its ends to permit it to be flexed laterally with respect to the axis of the shaft, means for attaching the ink applying disk to said spring at a point where said spring is free of the connection to the shaft, a ribbon driven pulley over which the ribbon to be inked is adapted to pass, the shaft of the ink applying disk being so located with respect to the ribbon driven pulley and the ink lifting means as to cause the ink applying disk to engage the ink lifting means and the ribbon as the ribbon passes around the said pulley, and means for driving the ink applying disk from the ribbon driven pulley.

7. An ink applying means for a ribbon inking device comprising a rotatively supported shaft, a coil spring surrounding a portion of said shaft with the ends of said spring connected to said shaft for rotation of the spring with said shaft, the spring being out of contact with the shaft at a point between its ends whereby said unattached portion of the spring may be resiliently flexed laterally with respect to the axis of the shaft, and an ink applying disk secured to said spring at said point where the spring is out of contact with the shaft.

8. An ink applying means for a ribbon inking device comprising a rotary member, a coil spring surrounding a portion of said rotary member and concentric therewith, one end of said spring being connected to said rotary member for rotation of the spring with said rotary member, the spring being out of contact with the rotary member for a portion of the length of the spring whereby said portion of the spring may be resiliently flexed laterally with respect to the axis of the rotary member, and an ink applying disk secured to said portion of the spring which is out of contact with the rotary member.

9. In a ribbon inking device, the combination of a shaft rotative about a fixed vertical axis, a helical spring the convolutions of which extend around the shaft with said spring connected at its opposite ends with the shaft to rotate with the shaft, and a disk for receiving ink on its periphery and transferring ink from the periphery of the disk to a face of a ribbon, said shaft and spring extending through the center of the disk with the disk secured to the spring intermediate the secured ends of the spring to rotate with the spring, said disk and the spring being laterally shiftable relatively to the shaft between the secured ends of the spring.

10. In a ribbon inking device, the combination of a disk for transferring ink from the periphery of the disk to a face of a ribbon, a disk-supporting helical spring extending through the disk and beyond both faces of the disk and to an intermediate portion of the length of which spring said disk is secured to rotate with the spring, and a spring-supporting shaft journalled to rotate about a fixed axis and extending through the disk and the several convolutions of the spring and to which said spring is secured at opposite ends of the spring for rotation of the spring and disk with the shaft and for yielding of the spring and disk laterally in all directions relatively to the axis of the shaft.

11. In a ribbon inking device, the combination of an ink-applying disk for transferring ink from the periphery of the disk to a face of a ribbon, a helical supporting spring for said disk which extends through the disk and beyond both faces of the disk and to an intermediate portion of the length of which spring said disk is secured for rotation of the disk with the spring, and supporting means for said spring mounted for rotation about a fixed axis and secured to said spring at opposite ends of the spring for rotation of the spring with said spring-supporting means, said spring and disk and spring-supporting means being constructed and arranged for yielding of the spring and disk between the secured ends of the spring laterally of the fixed axis of rotation of said spring-supporting means.

12. In a ribbon inking device, the combination of a helicoidal spring supported at one end thereof for rotation about a fixed axis extending in the general direction of the length of the spring and for yielding of said spring for a portion of its length laterally of said axis, and an ink-applying disk secured to said laterally yieldable portion of the spring to rotate with the spring and supported by the spring to yield edgewise of the disk transversely of the said fixed axis with the disk disposed substantially perpendicular to said axis.

13. In a ribbon inking device, the combination of a helicoidal spring, rotary supporting means for said spring mounted for rotation about a fixed axis which extends in the general direction of the length of the spring, said spring having one end portion only thereof secured to said supporting means for rotation of the spring with said means and having its other end portion yieldable laterally of said fixed axis of rotation of said means, and an ink-applying disk for transferring ink from the disk periphery to a face of a ribbon and secured to said yieldable end portion of the spring to yield therewith edgewisely of the disk laterally of said fixed axis and to rotate with said spring.

14. In a ribbon inking device, the combination of an upstanding helical spring, supporting means for said spring mounted for rotation about a fixed upstanding axis and to which said spring is secured to rotate with its supporting means and for yielding of a portion of said spring laterally of the axis of rotation of the spring supporting means, a substantially horizontally disposed ribbon inking disk secured centrally thereof to the laterally yieldable portion of the spring to rotate with the spring and to yield with said portion of the spring laterally of the axis of rotation of the spring supporting means, an ink supply rotary member supported for rotation about an upstanding axis and contacted at its periphery by the periphery of the disk, and a ribbon backing pulley supported for rotation thereof about an upstanding axis by the ribbon to be inked and having its

periphery opposed to that of the disk for yielding pressing of the ribbon to the pulley by the disk with the disk yieldingly pressed to the rotary ink supply member.

15. In a ribbon inking device, the combination of a pulley supported for rotation about an upstanding axis by traction of one face of a ribbon to be inked, an ink supply member supported for rotation about an upstanding axis, a ribbon inking disk having its periphery opposed to those of the pulley and ink supply member, an upstanding helical spring supporting said disk to yield edgewise of the disk relatively to the pulley and ink supply member and normally urging said disk edgewise toward both said pulley and ink supply member for simultaneous contact of the disk with said member and the ribbon to be inked, supporting means for the spring mounted for rotation about a fixed upstanding axis, said spring being secured to its supporting means to rotate therewith and said disk being secured to said spring to rotate with the spring, and means forming a driving connection between the pulley and said spring supporting means for rotative driving of the spring supporting means from the pulley during travel over the pulley of the ribbon to be inked.

16. An ink applying means for a ribbon inking device comprising a rotary member having a laterally yieldable spring coupling surrounding a portion thereof and concentric therewith, one end of said spring coupling being connected to the said rotary member for rotation of the said coupling with the said rotary member, and the spring coupling being out of contact with the rotary member for a portion of the length of the said coupling, and an ink applying disk secured concentrically to that portion of the spring coupling which is out of contact with the rotary member in a plane perpendicular to the axis of the rotary member, whereby said out-of-contact portion of the spring coupling with the attached disk may be resiliently flexed laterally in any direction with respect to the axis of the rotary member by pressure applied to the edge of the disk.

CARL GABRIELSON.