

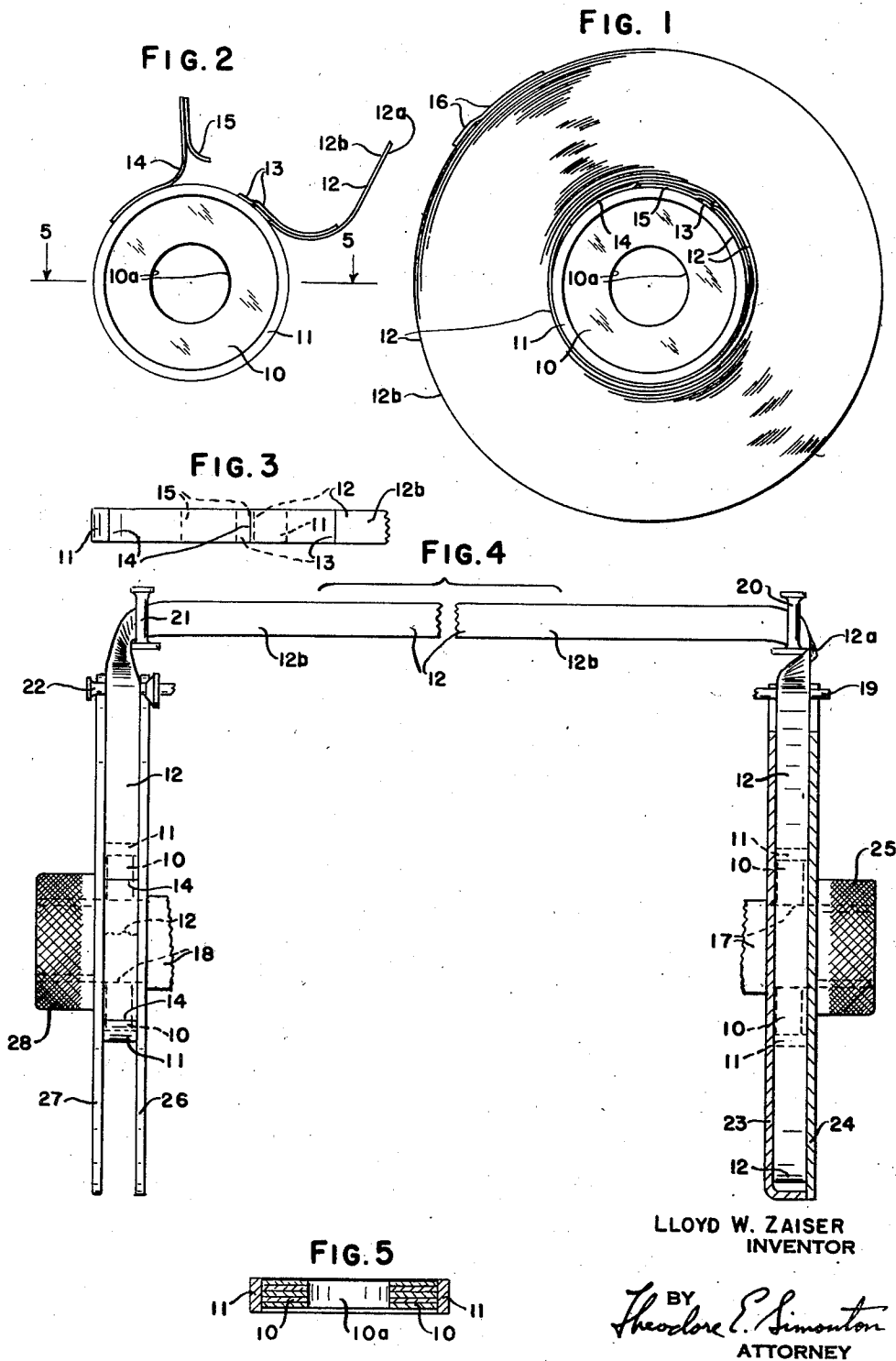
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CARBON RIBBON SUPPLY FOR TYPEWRITERS

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CARBON RIBBON SUPPLY FOR TYPEWRITERS

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6 Claims. (Cl. 197—172)

The invention relates to improvements in carbon ribbon supplies for typewriters.

Typewriters are known wherein type impressions are inked at a printing point by a carbon paper ribbon which is fed once past the printing point and then discarded, the ribbon being progressively unwound from a wound supply and rewound after passing the printing point, the rewound ribbon being discarded when the wound supply is exhausted. Such carbon paper ribbons, which are usually fed one letter space distance at a time past the printing point, have a very short useful life and must frequently be replaced notwithstanding the fact that they are usually supplied in lengths of 200 yards or more. The ribbons are formed of very thin paper, are coated on one face only with carbon paper ink having a wax base, and usually are about $\frac{1}{4}$ " to $\frac{3}{16}$ " wide. Since the ribbons are easily torn or ruptured, they usually are fed through the typewriter and rewound by friction drive means.

The general purpose of the invention is to provide an improved article of manufacture comprising a wound supply of such ribbon and so constructed that the ribbon may be installed in and removed from a typewriter by a typist quickly and easily and with a minimum of soiling of the hands.

A further purpose of the invention is to provide an inexpensive, light weight and disposable wound ribbon supply including core means and ribbon attaching means whereby the core means may be used as a rewind core for a new ribbon after the ribbon originally wound on the core means has been used.

A further purpose of the invention is to provide in such a ribbon supply improved means for preventing accidental unwinding of the wound ribbon prior to installation in a typewriter and for facilitating installation of the ribbon in the typewriter.

The foregoing and other purposes of the invention will more fully appear from the following description of a preferred embodiment of the invention illustrated in the accompanying drawing.

In the drawing:

Figure 1 is an end view of the wound carbon paper ribbon supply intact as furnished for installation in a typewriter;

Figure 2 is an end view of the core means with its two ribbon attaching means hereinafter described and showing the inner end of the original ribbon as it is attached to the core means prior to reeling of the ribbon;

Figure 3 is an edge view of the parts shown in Figure 2;

Figure 4 is a fragmentary front elevation, with certain parts broken away, of a known carbon ribbon typewriter and showing the ribbon supply installed in the typewriter; and

Figure 5 is a sectional view of the core means taken on the line 5—5 of Figure 2.

The disposable ribbon supply comprises a two-part core means 10 and 11, a carbon paper ribbon 12 wound upon the core means, and additional means hereinafter

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described. The core means comprises a cylindrical bearing bushing 10 having a tight frictional fit within an annulus 11. The annulus 11 consists of a short length of thin cardboard tubing about $\frac{1}{16}$ inch thick and the length of which corresponds with the width of the ribbon, preferably about $\frac{1}{4}$ inch. The bearing bushing 10 has a cylindrical axial bearing opening 10^a therethrough, the diameter of which is one-half, or less than one-half, that of the bushing, said bushing consisting of laminated cardboard disks having a diameter of preferably about $1\frac{1}{2}$ inches and which are disposed in planes perpendicular to the axial line of the bushing. Said two-part core means is of light weight, is inexpensive, has a high resistance to radial and lateral crushing and bending, and is adapted to fit on a supporting shaft or hub means of small diameter provided therefor in a typewriter.

The carbon paper ribbon 12 has an inked face 12^a and an uninked face 12^b, said ribbon being wound on the core means with its inked face innermost. The inner end of the ribbon is attached to the core member 11 by means of a short length of adhesive tape 13 which extends only part way about the periphery of the core member. Said tape has an uncoated outer face, its inner face being coated with a pressure-sensitive adhesive and being adherently pressed throughout one end portion of the tape to the periphery of core member 11 and, throughout the remainder of the tape, to the outer uncoated face of the underlying inner end portion of the ribbon.

To adapt the core means for use as a re-wind core means for another ribbon following use of the ribbon originally wound upon the core means, as hereinafter more fully explained, there is provided a second short length of adhesive tape 14 which extends only part way about the periphery of the core member 11 and which has an uncoated outer face and an inner face coated with a pressure sensitive adhesive. One end portion of tape 14 has its inner adhesive face adherently pressed to the periphery of core member 11 and the remainder of the length of said tape 14 is free of the core and is covered by a protective strip or tape of waxed paper 15. The waxed paper strip 15 may be removed from the tape 14 by grasping it at one end and peeling it off as indicated in Figure 2. For convenience in performing this operation, a narrow portion of the inner face of tape 14 adjacent one end of strip 15, preferably the innermost end of the strip, is left uncoated with adhesive. The major portion of the waxed paper strip 15 is pressed firmly enough to the adhesive surface of tape 14 to adhere thereto but the resistance of the waxed paper to adherence to tape 14 is sufficient to permit easy removal of strip 15 from tape 14 without said strip carrying with it on such removal any material amount of the adhesive coating of tape 14. Tapes 13 and 14 are formed of very thin paper but, if desired, may be formed of other thin material such as plastic sheet material.

The carbon paper ribbon 12 is wound on the core means clockwise, as viewed in Figure 1, and is wound inked face innermost, and the tapes 13 and 14 extend similarly clockwise around the core means from that end of each tape which is adhesively attached to the core means. The wound ribbon is held in wound condition by a short sealing adhesive tape 16 which is formed of paper or other suitable very thin material easily rupturable by a typist and coated on only one face with a pressure sensitive adhesive material. This sealing tape 16 extends circumferentially about the wound ribbon supply over a small extent of said supply circumference with its adhesive face pressed adherently on the uncoated outer face of the reeled carbon paper ribbon at both sides of the outer end edge of the ribbon to hold the ribbon against accidental unwinding.

Said adhesive tapes and the protective tape are of the same width as the ribbon and their longitudinal edges are aligned with those of the ribbon.

The above described ribbon supply may be easily handled without soiling of the hands and without crushing or deforming the core. Notwithstanding its large diameter the supply is of very light weight and it has a core which is of light weight, very strong, and inexpensive notwithstanding the large diameter of the core and which may be mounted on supporting hubs or shafts of small diameter in the typewriter, the core being reusable as a rewind core for a second carbon paper ribbon and discardable with that ribbon.

The improved ribbon supply is shown in Figure 4 installed in a known carbon ribbon typewriter of the kind set forth, only so much of the typewriter being shown as is necessary for an understanding of the mode of use of the improved ribbon supply. The known typewriter has at the right hand side thereof a stationary supporting spindle 17 which extends horizontally and transversely of the machine and on this spindle the ribbon supply is supported for unwinding. The typewriter has at its left hand side a spindle 18 which is rotatively driven intermittently or step by step, and by means not shown, as each letter is typed, said spindle turning clockwise as viewed from the left side of the machine and serving as a ribbon rewinding spindle. Suitable ribbon guides 19, 20, 21 and 22 also are provided on the typewriter which also has the usual ribbon vibrator, not shown, but through which the ribbon passes intermediate guides 20 and 21 and by which the ribbon is lifted at the type strokes to interpose the ribbon between the type and the printing point in the well known manner.

Detachably mounted on the reduced outer end portion of spindle 17 is a ribbon supply housing and guide means comprising a flanged disk 23 and an outer disk 24 removably held clamped against the flange of disk 23 by a knob 25 which is detachably held to spindle 17. The two disks are held against rotation by engagement of guide 19 in radial slots in said disks, and the flange of disk 23 is cut away forward of said guide for passage of the carbon ribbon upwardly out of the housing at the front of guide 19. The ribbon rewinding spindle has a reduced hub portion at the inner end of which a ribbon guiding disk 26 is fixed for rotation with the spindle. An outer ribbon guiding disk 27 and a knob 28 are detachably held to the spindle 18 in a manner to lightly frictionally clamp between disks 26 and 27 a used ribbon core 10-11 mounted on the hub portion of spindle 18 for friction slip driving of the core to rewind a carbon ribbon as it is unwound from a supply whose core is journaled on stationary spindle 17.

The ribbon supply shown in Figure 1 is slipped upon spindle 17 with knob 25 and disk 24 removed and with that side of the supply appearing in Figure 1 outermost. Seal 16 is broken and the free end of the ribbon is pulled upward from the front upper portion of the wound supply in front of guide 19, thence rearward over guide 19 to guide 20 and twisted and carried to the left behind guides 20 and 21 with its inked face facing rearward adjacent the front of the platen of the typewriter, thence forward over guide 22 with the ribbon twisted to present its inked face to guide 22, and finally downward to the ribbon rewind core 10-11 which is slipped on the hub portion of spindle 18 with that side of the core shown in Figure 2 innermost.

The core mounted on spindle 18 is one from which the carbon ribbon has been unwound and used for typing and from which the inner end of the used ribbon has been detached by tearing off its attaching tape 13. This core is transferred to the spindle 18 to serve as a rewind core. Tape 15 is detached from tape 14 of this empty core and the leading end of the ribbon of a new supply which has been threaded through the guides as above described is adhesively attached at its uninked

face to the free portion of tape 14 for rewinding of the new ribbon supply inked face innermost on the core on the rewind spindle.

The light weight core with its small diameter bore is highly desirable in that the large bulks of a fresh and a fully rewound supply of ribbon together with their supporting cores constitute large diameter masses of minimum weight having a minimum tendency to over-rotate in response to intermittent rotation of the rewind spindle 18 and requiring a minimum of effort to feed the ribbon. The entire ribbon supply is of light weight, is inexpensive, its core may be used once as a rewind core and discarded with a ribbon rewound thereon, and the supply may be handled, quickly installed, and discarded with ease and with a minimum of soiling of the hands. In passing a fresh ribbon between guides 20 and 21, it is engaged in the ribbon vibrator of the machine by the typist in the usual manner.

I claim:

1. A disposable carbon ribbon supply for use in typewriters which unwind a type impression inking carbon paper ribbon from a supply core and rewind the ribbon on a rewind core during typing and comprising a wound supply of carbon paper ribbon having an inked and an uninked face and wound inked face innermost in concentric convolutions, a two-part cylindrical core supporting the wound ribbon including a cardboard tube and a cylindrical bearing bushing which has a tight friction fit within said tube for conjoint rotation of the tube and bushing, said bushing formed of laminated disks of cardboard disposed perpendicularly to the axial line of the two-part core, a pressure sensitive adhesive tape adhering to the outer periphery of the wound supply of ribbon and extending across the outer end edge of the ribbon to thereby seal the wound supply of ribbon against accidental unwinding, a second pressure sensitive adhesive tape adhering to the periphery of the tube and to the uninked face of the inner end portion of the wound ribbon to attach the ribbon to the core, a third pressure sensitive adhesive tape having one end portion thereof adhering to the periphery of the tube and its opposite end portion free, and an adhesive resistant waxed paper tape underlying the free end portion of said third adhesive tape and weakly adhering thereto whereby, after complete unwinding of the ribbon from the core and removal of the waxed paper tape, the core may be used as a rewind core for the ribbon of a similar supply attachable to the core by the free end portion of the third adhesive tape and discardable with said core when rewound thereon, said ribbon and all of said tapes being formed of very thin paper and having coincident longitudinal edges, each tape extending only part way about the core and each of the adhesive tapes having a non-adhesive outer face and an inner face coated with a pressure sensitive adhesive.

2. A disposable carbon ribbon supply, as claimed in claim 1, wherein the waxed paper tape has one end portion thereof free from the third adhesive tape adjacent that end portion of said third adhesive tape which adheres to the tube.

3. A carbon ribbon supply for use in typewriters of the kind specified and which comprises a carbon ribbon wound inked face innermost and in concentric convolutions, a disposable two-part cylindrical supporting core to which the inner end of the ribbon is connected and about which the ribbon is wound, said core including a peripheral cardboard tube and a cylindrical bearing bushing having a tight frictional fit within said tube and formed of laminations of cardboard disposed perpendicularly to the axial line of the core, an adhesive tape across the outer end edge of the ribbon and adhering to the adjacent underlying portions of the uninked outer face of the ribbon to prevent accidental unwinding of the ribbon, a pressure sensitive adhesive tape having a free end portion and an end portion adhering to the periphery of the core tube, and a protective tape highly resistant

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to adherence thereto of said pressure sensitive tape and interposed between the core and the free end portion of said tape, each of said tapes having its longitudinal edges aligned with those of the ribbon, and said core being usable, after unwinding and detachment of said ribbon therefrom, as a rewind core for the ribbon of a second and similar supply, which latter ribbon is attachable to the core by adhering that ribbon to the free end portion of said pressure sensitive tape.

4. A carbon ribbon supply for use in typewriters of the kind specified and which comprises a disposable and cylindrical core of light weight and having an axial bearing bore of much smaller diameter than that of the core, a carbon ribbon wound in concentric convolutions around the core and having its inner end connected with the core, an adhesive tape adhesively engaged with the periphery of the wound ribbon with the tape extending across the outer end edge of the ribbon to prevent accidental unwinding of the ribbon, a pressure sensitive adhesive tape having a free end portion and an end portion adhering to the periphery of the cylindrical core, and a protecting tape for the free end portion of said pressure sensitive tape and interposed between the core and said free end portion of the pressure sensitive tape, said core being usable, after unwinding and detachment of the wound ribbon, as a rewind core for the ribbon of a second and similar supply, which last-mentioned ribbon is attachable to the core by adhering that ribbon at one end to the free end portion of the pressure sensitive tape.

5. A carbon ribbon supply for typewriters compris-

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ing a carbon ribbon wound in concentric convolutions, a cylindrical supporting core upon which the ribbon is wound, two pressure sensitive tapes each having only one adhesive face and each having one end portion thereof adhering to the periphery of the cylindrical core, the remaining portions of said adhesive tapes extending in the same direction and only part way around the core with the remaining portion of one of the adhesive tapes adhering to the inner end portion of the ribbon to attach the ribbon to the core, and a protective tape interposed between the core and the remaining portion of the other one of the adhesive tapes and removable for use of that tape portion to attach a second carbon ribbon to the core to permit re-use of the core as a ribbon rewind core for said second ribbon following unwinding and detachment from the core of the first-mentioned carbon ribbon.

6. A carbon ribbon supply for typewriters of the kind specified and which comprises a carbon ribbon having an inked face and an uninked face, a cylindrical core upon which the ribbon is wound inked face innermost, a pressure sensitive adhesive tape having a non-adhesive face and also having one end portion adhesively attached to the periphery of the core, and a protective tape interposed between the core and the adhesive face of the other end portion of the adhesive tape and removable for use of that end portion of the adhesive tape to attach a second carbon ribbon to the core to adapt the core for re-use as a re-wind core for a second carbon ribbon.

No references cited.