

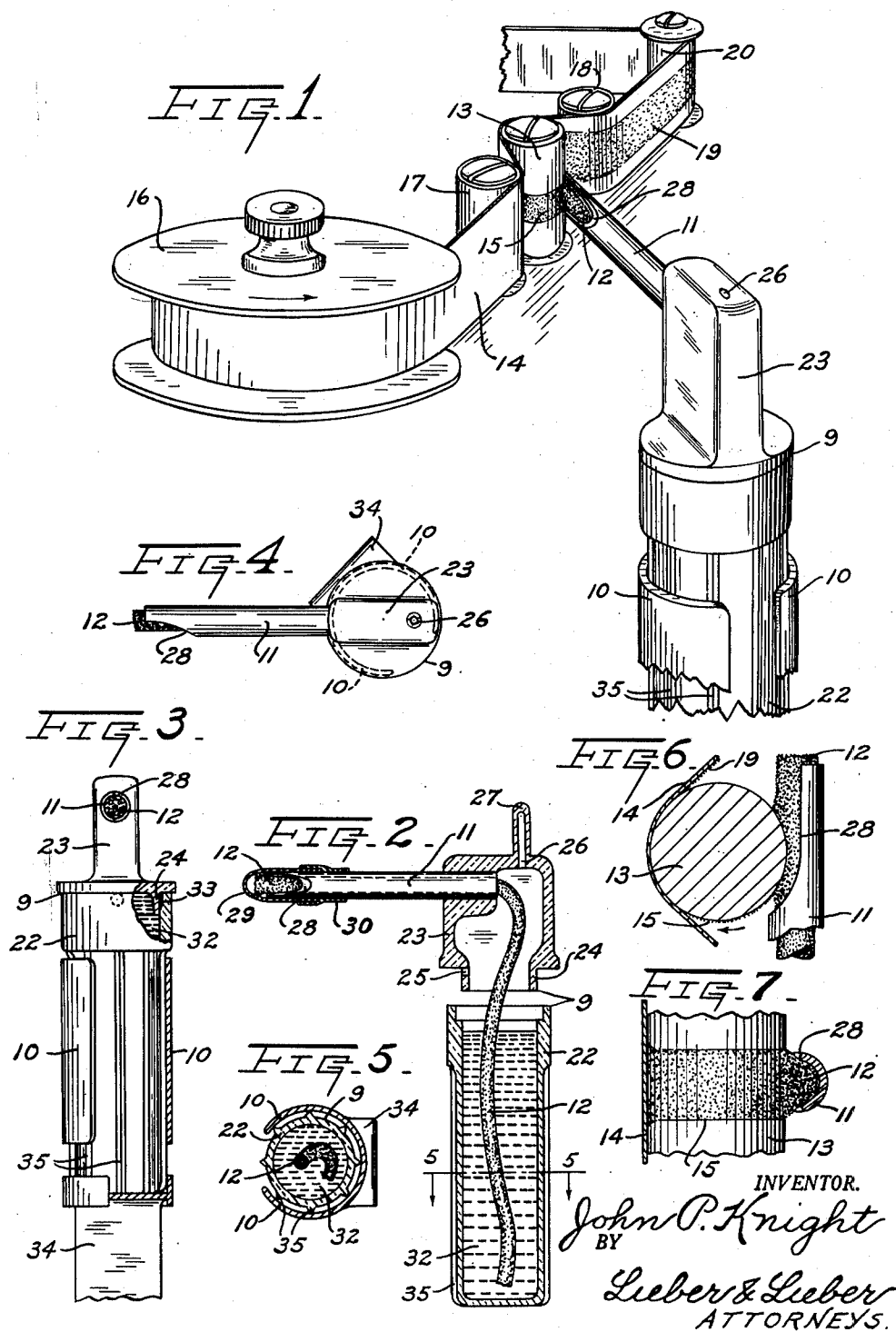
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APPARATUS FOR INKING RIBBONS

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APPARATUS FOR INKING RIBBONS

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The present invention relates in general to improvements in the art of supplying ink to the continuous bands or ribbons of typewriters or the like, and relates more specifically to an improved method of and apparatus for maintaining the impression ribbons of divers types of typewriting machines properly supplied with ink.

The primary object of my invention is to provide an improved mode of supplying and of applying fresh ink to the continuous ribbons of typewriters of various kinds.

It has heretofore been common commercial practice to supply fresh ink to the advancing continuous ribbons of typewriting machines such as tabulators, by feeding the ink from a supply basin through a wick to the impression face of the traveling ribbon while the latter is being fed from one guiding spool to another. In most of these prior re-inking systems, fresh ink is poured into the supply basins from a bottle or the like, whenever the supply runs low, and is delivered to the surface of the ribbon by capillary attraction through a feed tube having therein a flat or rather loosely woven wick; and these previous devices were not only extremely messy due to the method of handling the fresh highly fluent ink, but they also failed to uniformly distribute the ink upon the ribbon and could not be conveniently adjusted to vary the quantity of fresh ink actually deposited upon the advancing ribbon surface.

It is therefore an important object of the present invention to provide an improved system for supplying fresh ink to such ribbon inking systems, in the form of hermetically sealed batches or cartridges which may be readily handled and applied to the machines without messing the operator's hands, clothing, or the permanent parts of the machines.

Another important object of this invention is to provide an improved wick and mounting for ribbon reinking receptacles or cartridges, whereby the ink may be uniformly deposited upon the ribbons in regulated quantities and over selected areas only of the inked receiving surfaces.

A further object of my invention is to provide an improved ink confining and dispensing container or receptacle for typewriter ribbon inking devices, which will effectively seal the ink before application of the unit to a machine, and which will also eliminate messy ink from escaping after the container has been installed for normal use.

Still another object of the invention is to provide an improved ink supply unit and an im-

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proved mode of producing the same, so that the confined ink will remain intact and fresh until the unit is applied for actual use, while most effective dispensation of the contents results after such installation of the unit.

An additional object of the present invention is to provide a simple, relatively inexpensive, and highly efficient system for effecting re-inking of continuous typewriter or similar ribbons, in which the various structural elements may be safely and conveniently handled and manipulated without introducing messy conditions.

These and other objects and advantages of my invention will be apparent from the following detailed description.

A clear conception of the several steps involved in my new system for packaging ink, and of the construction and operation of the various elements of a typical ribbon re-inking apparatus embodying the improvements, may be had by referring to the drawing accompanying and forming a part of this specification wherein like reference characters designate the same or similar parts in the various views.

Fig. 1 is a fragmentary perspective view of a typical tabulator ribbon inking assemblage, illustrating the manner in which my improved fresh ink supply cartridges and wicks may be applied during actual use;

Fig. 2 is a central vertical section through one of my improved ink cartridges, with the closure cap about to be applied during production of the unit;

Fig. 3 is a part sectional elevation of one of the improved ink cartridges, looking toward the delivery end of the wick and showing the unit mounted in a pivot clamp preparatory to normal use;

Fig. 4 is a top view of one of the improved ink supply units, showing the same supported in a mounting clamp;

Fig. 5 is a transverse section through one of the ink laden cartridges taken along the line 5—5 of Fig. 2, and depicting the unit disposed within a pivot clamp;

Fig. 6 is an enlarged diagram illustrating the manner in which the improved cylindrical wick may be caused to coact with the ink transfer roller, viewed from above; and

Fig. 7 is a similarly enlarged diagram illustrating the wick and ink transfer roller coaction as viewed from the side.

While the invention has been shown and described herein as being especially advantageously applicable to typewriter ribbon re-inking systems

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and for office use, it is not my desire or intention to unnecessarily limit the utility of the improvements by virtue of this restricted disclosure.

Referring to the drawing, the typical system for re-inking continuous typewriter ribbons shown therein, comprises in general an approximately cylindrical fresh fluent ink supply cartridge 9 adapted to be rotatably adjustably confined within a resilient clamp 10 mounted upon the frame of a typewriting machine, and having a laterally extending tube 11 at its upper end within which a cylindrical felt wick 12 is snugly confined; and an ink transfer roller 13 journaled for rotation upon the machine frame and coacting with the wick 12 and with a continuous advancing ribbon 14 of the typewriter so as to produce a band 15 of ink which travels from the wick to the ribbon 14 during normal advancement of the latter. The ribbon 14 may be fed from a supply spool 16 past a set of spaced parallel guide rolls 17, 18 coacting with one face of the ribbon, while the ink transfer roller 13 coacts with the opposite face of the ribbon 14 between the guide rolls 17, 18, and the tension on the advancing ribbon should be maintained sufficient to cause the roller 13 to spread the fresh ink into a wider area or band 19 as the re-inked ribbon passes the transfer roller and approaches the final guide roll 20, see Fig. 1.

The fresh ink supply receptacle or cartridge 9 is of improved hermetically sealed construction. Each cartridge unit consists of a cylindrical relatively deep cup-shaped lower casing 22, and a closure cap 23 having an annular lip 24 at its lower end pierced by a vent hole 25 while its upper end is provided with another vent opening 26 normally sealed by an integral sealing projection 27 in addition to having the wick guiding tube 11 rigidly associated therewith. The inner end of each tube 11 must be hermetically sealed with respect to its carrying cap 23, while the outer end thereof is preferably provided with a cut-away portion 28, and the cylindrical wick 12 which may loosely coact with but it preferably cemented to the interior of the tube 11, has an inner depending end which is adapted to extend into the lower casing 22 and to rest on the bottom thereof. The outer end of the wick 12 preferably extends past the tube portion 28 to the outer tube end, and is initially enclosed within a sealing cap 29 either screwed or slip-fitted over the tube end, and sealed by a gasket or a seal strip 30, as shown in Fig. 2.

When the various elements of each improved ink confining cartridge 9 have been initially constructed as above described, the successive lower cup-shaped casings 22 are preferably supplied as in Fig. 2, with batches or quantities of the fluent ink 32. With the ink 32 in each batch still in heated condition, the cap 23 may be applied so that the depending end of the wick 12 will be immersed in the ink, and the cap lip 24 may be gradually forced within the upper end of the bore of the casing 22 with sealing cement 33 applied to the annular gap as shown in Fig. 3. During this application of the cap 23, air will escape through the vent hole 25 until this escape passage is sealed by the cement 33; and since the vent hole 25 is sealed by the integral projection 27 and the outer end of the tube 11 is also hermetically sealed by the auxiliary cap 29 and strip 30, the finally prepared ink receptacle will be hermetically sealed. If the cap is applied with the ink in a heated condition the cartridge will have somewhat reduced internal pressure when the confined ink 32 cools to atmospheric temperature and contracts.

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After the cartridges 9 have been thus constructed, loaded and hermetically sealed, the units may be handled without danger of ink escaping, and in order to apply one of the ink laden cartridges to a typewriter or other machine, it is only necessary to insert the lower portion of the cylindrical casing 22 between the resilient jaws of the spring clamp 10 which is provided with a mounting bracket 34 as shown in Figs. 3, 4 and 5, adapted to be secured to the machine frame in any suitable manner. The disposition of the mounting bracket 34 must be such that the portion of the cylindrical wick 12 at the cut-out portion 28 of the confining tube 11 will be approximately tangent to the periphery of the ink transfer roller 13; and the casing 22 should be firmly frictionally engaged by the clamping jaws 10 but should also be rotatably adjustable about its central vertical axis so as to position the swinging end of the tube 11 at different selected distances toward or away from the roller 13. With the ink laden cartridge 9 thus positioned within its mounting clamp, the sealing projection 27 may be broken away so as to expose the interior of the previously sealed ink confining receptacle to the ambient atmosphere, and the sealing strip 30 and cap 29 may be removed, whereupon the outer end portion of the cylindrical felt wick 12 may be caused to coact with the roller 13, as shown in Figs. 6 and 7.

With the installation of the fresh cartridge 9 thus completed, the ink 32 will be exposed to atmospheric pressure and ink will saturate the felt wick 12 by capillary attraction throughout its entire length; and by utilizing the upper rectangular portion of the closure cap 23 to swing the tube 28 relative to the ink transfer roller 13, the outer end of the wick 12 may be flattened more or less against the roller periphery so as to vary the width of the ink band 15 deposited upon the roller 13 during rotation thereof by the longitudinally advancing ribbon 14. The band 15 of ink 32 thus delivered to the roller 13 will be transferred to the ribbon 14 during advancement of the latter, and will be spread out into a somewhat wider band 19 as depicted in Fig. 1, and by effecting accurate rotary adjustment of the cartridge 9 within the holding clamp 10, any desired uniform widths of ink bands 15, 19 may be established. The typewriter ribbon 14 may be advanced either constantly or intermittently, and the wick 12 will continue to feed ink 32 from the casing 22 until the supply or batch is entirely consumed, whereupon the empty unit may be thrown away and replaced by a new ink laden hermetically sealed receptacle.

While the above described mode of applying fresh cartridges 9 and of effecting adjustment thereof, will substantially obviate undesirable escape of ink, the lower casings 22 of the cartridges 9 which are preferably formed of transparent plastic or other material in order to give a visible indication as to when the ink supply has been depleted, may be provided with external parallel ribs 35 adapted to coact with the clamping jaws 10 of the mounting bracket 34 in the manner shown in Fig. 5, whereby only the ridges or crests of the local ribs 35 will contact these jaws and the intervening peripheral surfaces of the casing 22 will be spaced from the clamp. With this construction, if ink has been accidentally deposited upon the internal surfaces of the jaws 10, the exterior of the casing 22 will not be smeared with ink when the cartridge 9 is inserted within the mounting clamp and is subsequently rotated for adjustment purposes, thus insuring

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clear vision through the transparent cartridge wall at all times. The spaced ribs 35 also facilitate insertion and removal of the cartridge units relative to the clamp, and furthermore assist in holding the cartridges in various adjusted positions.

From the foregoing detailed description, it will be apparent that my present invention in fact provides an improved system and apparatus for inking continuous ribbons 14 without wasting ink or introducing messy conditions. By loading and sealing the supply cartridges 9 in the manner described, these units may be handled without danger of having any ink escape until the cartridge seals are broken, and this hermetic sealing also prevents possible tampering and substitution of ink 32 before the cartridges are to be finally utilized. The improved cylindrical wicks 12 and cut-away formation of the tube end portions 28, cooperate with the cartridge mounting brackets 34 and clamps 10, to provide means for accurately adjusting or varying the rate of feed; and the tangential coaction of the cylindrical wicks 12 with the ink transfer rollers 13 insures uniform feeding and distribution of the ink upon the ribbon surfaces. The various parts of the cartridges 9 may be inexpensively but attractively produced of transparent plastic materials of diverse colors indicative of different types of inks, and the discarding of the used cartridges incurs only slight waste as compared to the advantages gained by the hermetic sealing of the original cartridges. Features of the invention have gone into highly satisfactory commercial use and have proven very popular with the trade due to the substantial elimination of messy working conditions and more effective application of the ink. It is also noteworthy that by forming the lower casing 22 as a unitary cup, possible leakage of ink through the cup button is positively avoided, and since the ink used in typewriter inking systems is highly fluent, this feature is important. The improved cartridge is devoid of joints at the bottom and may have the wick confining tube 11 formed integral with the closure cap 23, and may be utilized for the dispensation of any fluid having characteristics analogous to those of ink.

It should be understood that it is not desired to limit this invention to the exact steps of the system or to the precise details of construction and use of the apparatus, herein shown and described, for various modification within the scope of the appended claims, may occur to persons skilled in the art; and it is also contemplated that specific descriptive terms used herein be given the broadest possible interpretation consistent with the disclosure.

I claim:

1. An article of manufacture comprising, a hermetically sealed ribbon inking cartridge having a sealing cap provided with a laterally extending tube and a detachable vent at the uppermost extremity of the cap, a supply of liquid ink confined within said cartridge below said cap under partial vacuum, a wick having one end immersed within the ink and its opposite end confined within said tube, and a detachable closure for the free end of the tube, the free end of said tube within said closure being formed to expose the side of the wick when said closure is removed.

2. An article of manufacture comprising, a hermetically sealed ribbon inking cartridge having a transparent lower ink receptacle and an upper sealing cap for the receptacle provided with a

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laterally extending tube and a detachable vent at the upper extremity of the cap, a supply of liquid ink confined within said cartridge under partial vacuum, a wick having one end immersed within the ink and its opposite end confined within the tube, and a detachable closure for the free end of the tube.

3. A sealed ink cartridge for application to a machine to supply fluid ink to an ink carrying ribbon of the machine comprising, a hollow container body adapted to contain a quantity of fluid ink, a tube secured to the body in sealed relationship therewith and opening within the same and projecting laterally therefrom, a wick disposed within the tube and extending within the hollow container body, the container body being adapted to be mounted with the tube opening into the same above the level of the fluid ink with the wick depending into the hollow of the body, means forming a vent opening for the body adjacent the portion to which the tube is secured, and means for sealing the vent opening and for sealing the free end of the tube and being removable to open the vent opening and expose the end of the wick for use of the cartridge.

4. A sealed ink cartridge for application to a machine to supply fluid ink to an ink carrying ribbon of the machine comprising, a hollow container body adapted to contain a quantity of fluid ink, a tube secured to the body in sealed relationship therewith and opening within the same and projecting laterally therefrom, a wick disposed within the tube and extending within the hollow container body, the container body being adapted to be mounted with the tube opening into the same above the level of the fluid ink with the wick depending into the hollow of the body, means forming a vent opening for the body adjacent the portion to which the tube is secured, and destructible means normally sealing the vent opening and sealing the free end of the tube, and removable by destruction to expose the wick and to open the vent opening for use of the cartridge.

5. A sealed ink cartridge for application to a machine to supply fluid ink to an ink carrying ribbon of the machine comprising, a hollow container body adapted to contain a quantity of fluid ink, a tube secured to the body in sealed relationship and opening within the body and projecting laterally therefrom, a wick disposed within the tube and extending within the hollow container body, closure means on the free end of the tube in sealed relationship therewith for sealing the cartridge with the wick therein, the end portion of the wick being exposed upon removal of said closure means for the transmission of fluid ink from the container body through the wick and the exposed portion thereof, the body, at a location adjacent the tube, having a hollow integral projection thereon adapted to be broken off to provide a vent opening.

6. A sealed ink cartridge for application to a machine to supply fluid ink to an ink carrying ribbon of the machine comprising, a hollow container body adapted to contain a quantity of fluid ink, a tube secured to one end of the body in sealed relationship and opening within the body and projecting laterally therefrom, a wick disposed within the tube and extending into the hollow container body, said wick being secured to the interior wall of said tube, and closure means on the free end of the tube in sealed relationship therewith for sealing the cartridge with the wick therein, the end portion of the wick being ex-

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posed upon removal of said closure means for the transmission of fluid ink from the container body through the wick and the exposed portion thereof.

7. A sealed ink cartridge for application to a machine to supply fluid ink to an ink carrying ribbon of the machine comprising, a hollow container body adapted to contain a quantity of fluid ink and having exterior parts constituting elements of a cylindrical bearing surface, such that the container body may be mounted in holding means so that it is rockable on its axis and slidable axially, a tube secured to the body in sealed relationship and opening within the body and projecting laterally from the axis thereof, a wick disposed within the tube and extending within the hollow container body, and closure means on the free end of the tube in sealed relationship therewith, the end portion of the wick being exposed upon removal of said closure means for the transmission of fluid ink from the container body through the wick and the exposed portion thereof.

8. A sealed ink cartridge for application to a machine to supply fluid ink to an ink-carrying ribbon of the machine, comprising a hollow container body adapted to contain a quantity of fluid ink, a tube secured to one end of the body in sealed relationship and opening within the body and projecting laterally therefrom, a wick disposed within the tube and extending into the hollow container body, said wick being secured to the interior wall of said tube and being formed to present an edge portion lengthwise of the tube relatively narrower than the body of the wick, and closure means for the tube and wick at the free end of the tube, the tube and closure means being formed to expose the wick along

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its narrower lengthwise portion on removal of the closure means for transmission of fluid ink through said narrower exposed portion.

9. A sealed ink cartridge for application to a machine to supply fluid ink to an ink-carrying ribbon of the machine, comprising a hollow container body adapted to contain a quantity of fluid ink, a tube secured to the body in sealed relationship to and opening into the body and projecting laterally therefrom, the body having exterior parts constituting elements of a bearing surface, whereby the container may be mounted in holding means and moved to adjust the position of the free end of the tube, a wick disposed within the tube and extending within the hollow container body, and closure means for the wick and free end of the tube, the tube laterally near its free end being open, the tube and closure means being formed to expose the wick in the opening near the free end laterally of the tube on opening, whereby the inking area of the exposed wick may be adjusted.

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