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METHOD FOR FRESHING-UP INK
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During the use of ink ribbons of typewriters, registering apparatus, type-printing, and similar machines so much ink is withdrawn from the ribbon that the copies are no longer satisfactory, and that the ink ribbons must be replaced by fresh ones, although, owing to the good quality of the ribbons, the fabric itself is still almost undamaged. For the individual consumer as well as for larger offices with many typewriters, it is desirable for economical reasons, to fresh up the used ink ribbons.

The methods for freshening up ink carriers, such as stamp pads, carbon papers, ink ribbons, and the like, are based more or less thereon that fresh ink or ink-dissolving liquids are applied in any manner, ink-baths, ink pads or similar means being employed.

It has for instance become known, to render fresh again stamp pads which have dried up, by rubbing glycerine on their surface. According to another known method worn ink ribbons are freshened up thereby, that the ribbon is conducted over a cylinder which runs in a moistening vessel and thus transmits the liquid onto the ribbon. Another known method has been proposed for freshening up dried carbon papers whereby the paper are heated in electrically heated apparatus to a quite determined temperature whereby the ink has to be uniformly distributed again over the paper.

These different methods for freshening up ink carriers do either not deal at all with the freshening up of ink ribbons, for which purpose they would be unsuitable even if properly altered or adapted, or they start, as is the case with the method mentioned in second place, from quite other suppositions, as will be hereinafter explained. For many reasons none of the few methods for freshening up ink ribbons which have become known up to the present, has been generally adopted or found favor with the public. The ink ribbons treated according to the methods either gave merely irregular or unsharp copies, or the treatment was too dirty, too expensive, or too complicated.

The method according to the invention utilises neither special heating apparatus, nor expensive apparatus, for transmitting the liquid. The ink of the worn ribbons is used up only at the points where the types strike against the ribbon, but remains at all other points in such sufficient quantity that it would last long beyond the time when the ribbon fabric has been destroyed and therewith long beyond the life of the ribbons. If it is possible to uniformly distribute onto the

whole ink ribbon the ink which is present in excess, it evidently will be unnecessary to apply fresh ink on the ribbon.

Experiments have shown, that this problem can be solved in a simple and perfect manner. If the ribbons are submitted for some time to the action of vapors from commercial liquid hydrocarbons possessing the property to dissolve the inks used in standard ribbons, the vapors condense again onto the fabric and impregnate the same. The ink is dissolved and brought from the points at which it is present in excess, by capillary effect quite uniformly upon those points from which the ink has been removed by the use of the ribbon. The above mentioned commercial liquid hydrocarbons may be any of the well known hydrocarbons usually employed for the preparation of impregnating baths, through which the typewriter ribbons that have to be rejuvenated are passed, but it is well understood, that I do not treat the ribbons with liquid hydrocarbons, that I subject same, however, to the action of the vapors of said hydrocarbons.

The ribbons submitted to this treatment give, after they have been introduced again into the machine, perfect and uniform copies. The method is extremely simple and clean. The rolled up and worn ribbon is removed from the type-writing machine and exposed, in a well closed container of suitable size, for some time to the action of the liquid vapors, the ribbon being slightly loosened at the same time by a suitable device so that the individual windings of the roll are not directly the one on the other, and care is taken that the ribbon does not come into direct contact with the liquid itself. It is evident that on a ribbon treated in this manner the ink is much more uniformly distributed than on ribbons treated according to the methods which directly apply the ink dissolving liquid onto the ribbon. The copies produced with the ribbons treated with hydrocarbon vapors are also much cleaner and more uniform than otherwise.

The method is so clean in its application, that it is no longer necessary to use the ink ribbons up to the limit of their efficiency and to be satisfied with the bad typing produced by half worn ribbons. The method will be employed as soon as the first traces of wear show, and it will be repeated as often as possible until the fabric of the band is torn and the ribbon has to be thrown to the waste.

Also for not-yet used, dried up ink ribbons, so-called stored goods, the method can be evidently employed in a similar manner, as the liquid

vapors dissolve the ink and the mostly fat containing constituents of the same, and distribute them so that the ribbons are made supple and useful.

I claim:

1. A method of rejuvenating typewriter ink ribbons and the like by a treatment with ink dissolving hydrocarbons, the method comprising the steps of placing the ribbon in a vessel, closing said vessel, vaporizing said hydrocarbons, and subjecting the ink ribbons to the action of the vapors thus produced.

2. A method of rejuvenating worn typewriter ink ribbons and the like, comprising the steps of placing the ink ribbons for a certain length of time in a closed vessel, subjecting said ribbons to the action of liquid vapors therein, and causing the absorption of said vapors by the fabric of the ribbon, thereby effecting a perfectly uniform distribution of the ink over the ribbon, by means of capillary action, particularly transmitting the ink from unused points to those sections having been worn out.

3. A method of rejuvenating worn typewriter

ink ribbons and the like, comprising the steps of placing the ink ribbons for a certain length of time in a closed vessel, subjecting said ribbons to the action of vapors of liquid hydrocarbon having the property to dissolve the ribbon ink, and causing the condensation and impregnation of said vapors to said ribbons, thereby effecting a perfectly uniform distribution of the ink throughout the ribbon by capillary action, particularly transmitting the ink from unused points to those having been worn out.

4. A method of rejuvenating worn typewriter ink ribbons and the like, which comprises loosening up the wound ribbon, placing said ribbon for a certain length of time in a closed vessel, subjecting the ribbon to the action of ink dissolving liquid vapor in said closed vessel without said ribbon contacting the ink dissolving liquid itself, and causing the absorption of the said vapors by the fabric of the ribbon, thereby effecting a perfectly uniform distribution of the ink throughout the ribbon, particularly transmitting the ink from unused points to those having been worn out.

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