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S. A. NEIDICH

METHOD OF RENEWING INK RIBBON

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FIG. I.

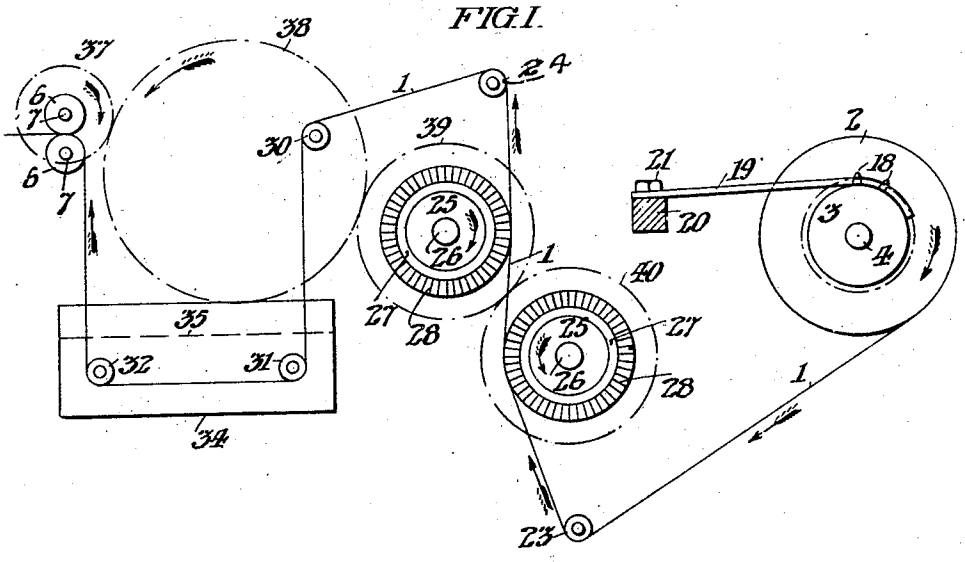
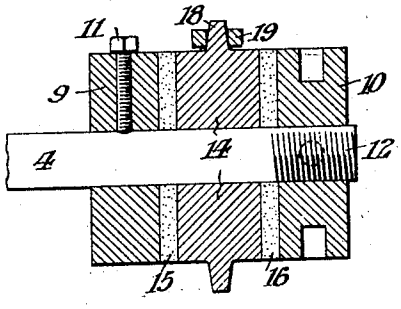


FIG. II.



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METHOD OF RENEWING INK RIBBON.

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My invention may be employed with particular advantage in the treatment of wide ribbons such as are used for duplicating machines, as the greater portion of the cost thereof is for the textile fabric which is more durable than the coating of ink with which it is impregnated. Such coatings are composed of finely comminuted solid material, such as carbon, or other solid coloring matter, mixed with waxy liquid, and the effect of use of such ribbons is to transfer from the fabric the greater portion of the liquid and to impact into the texture of the fabric a portion of the solid matter which is hardened by oxidation and thereafter extremely difficult to remove. It is the purpose and effect of my invention to break up the dried ink in the used ribbon and remove it so that the fabric may be reinked to substantially the same condition as when primarily inked.

In the form of my invention hereinafter described; the essential feature of the means employed is a pair of rollers carrying card clothing arranged to beat and brush the fabric, upon its respectively opposite sides, preferably in a direction opposite to that in which the fabric is drawn between said rollers. However, my invention includes the various novel features of construction, arrangement and method of procedure hereinafter more definitely specified.

In said drawings; Fig. I is a diagrammatic elevation, partly in section, showing a convenient apparatus embodying my invention.

Fig. II is a fragmentary axial sectional view of the friction retarding device including the shaft of the roller indicated at the right hand side of Fig. I.

Although a single ribbon of any of the standard lengths may be treated in accordance with my process; I find it more economical to connect a plurality of such ribbons, in series, by machine sewing their adjoining ends together. A ribbon, or preferably a series of such ribbons 1, thus connected, are wound in a roll 2 upon the idle roller 3 having the axial shaft 4. Said ribbon 1 is drawn from said idle roller 3 by the pair of feed rollers 6 having axial shafts 7. Said rollers 6 are preferably formed of iron composition and pressed toward each other so as to wring the fabric 1 as it passes between them. Therefore, I provide said idle roller 3 with suitable means for retarding its turning movement, so that said fabric 1 is under tension in its passage therefrom.

As indicated in Fig. II, I find it convenient to provide such friction retarding means by providing said shaft 4 with the collars 9 and 10; the former being rigidly connected with said shaft by the set screw 11, and said collar 10 being formed as a nut in engagement with the screw thread 12 on said shaft. I mount the friction block 14 loosely on said shaft 4 between said collars 9 and 10 but with friction disks 15 and 16, conveniently formed of leather or vulcanized fibre, upon opposite sides thereof and pressed into engagement therewith by the axial adjustment of said collar 10.

Although I term said element 14 a friction block, I find it convenient to form it as a sprocket gear with teeth 18 so that it may be anchored by the flexible connector 19 which is fixed at one end upon the stationary frame member 20, conveniently by the tap bolt 21. Such connector 19 may be a piece of sprocket chain or a leather, or other, strap with a hole, or holes, to engage said teeth 18. The effect of such arrangement is that the friction block 14 is prevented from turning, while the shaft 4 is permitted to turn therein under such friction as is imposed by the adjustment of said collar 10; so that the tension upon said ribbon fabric 1 may be varied and precisely adjusted by the operator.

Said fabric 1 is guided by the rollers 23 and 24 so as to be progressed between the pair of beating rollers 25, which latter may be precisely alike, provided with respective axial shafts 26, and covered with card clothing 27 provided with stiff wire papillæ 28, which may be radial as indicated, or be otherwise disposed. Said rollers 25 are both rotated so as to beat and brush said fabric 1 in the direction opposite to its movement, as indicated by the arrows on Fig. I; with the effect of breaking up the caked dried ink, residual in the fabric 1, and renewing the nap upon the latter.

Said fabric 1 is guided in its passage from said beating rollers 25 to said feed rollers 6, conveniently by the guide rollers 30, 31 and 32, so as to be directed into and from the tank 34 through the ink solvent 35, in said tank, which is conveniently a liquid either

entirely composed of, or containing, carbon tetrachloride which is capable of dissolving the loosened ink from said fabric 1.

As such ink solvent is costly, it may be observed that an economical feature of the apparatus indicated in Fig. I, is that the feed rollers 6 are so disposed with reference to said tank 34, that the solvent expressed from the fabric 1 by the wringing action of said rollers gravitates into said tank 34.

Although said rollers 6 and 25 may be positively driven by any suitable means; I find it convenient to provide one of said rollers 6 with the gear 37 engaging the intermediate gear 38 which engages the gear 39 on the upper roller 25; said gear 39 engaging the similar gear 40 on the lower roller 25.

However, I do not desire to limit myself to the precise details of construction, arrangement or procedure herein set forth, as it is obvious that various modifications may be made therein without departing from the essential features of my invention, as defined in the appended claims.

I claim:

1. The method of renewing used ink ribbon, formed of textile fabric impregnated with dried ink; which consists in progressing such inked ribbon, in one direction, while dry, between rollers provided with card clothing, including stiff wire papillæ; while beating and brushing said fabric in the opposite direction, by rotating said rollers, and thus loosening the dried ink in the fabric and reforming a nap upon each side of said fabric; progressing said fabric through an ink solvent, including carbon tetrachloride; thus dissolving such loosened ink from the fabric; and then expressing such solvent and solute from said fabric, by wringing the latter between opposed rotary rollers.

2. The method of renewing used ink ribbon, formed of textile fabric impregnated with dried ink; which consists in progressing such inked ribbon, in one direction, while dry, between rollers provided with wire papillæ; while beating and brushing said fabric in the opposite direction; by rotating said rollers, and thus loosening the dried ink in the fabric and reforming a nap upon each side of said fabric; progressing said fabric through an ink solvent; thus dissolving such loosened ink from the fabric; and then expressing such solvent and solute from said fabric, by wringing the latter between opposed rotary rollers.

3. The method of renewing used ink ribbon, formed of textile fabric impregnated with dried ink which consists in progressing such inked ribbon, in one direction, while dry, between rollers provided with stiff papillæ; while beating and brushing said fabric in the opposite direction, by rotating said rollers, and thus loosening the dried ink in the fabric; progressing said fabric through an ink solvent; thus dissolving such loosened ink from the fabric; and then removing such solvent and solute from said fabric.

4. The method of renewing used ink ribbon, formed of textile fabric impregnated with dried ink; which consists in progressing such inked ribbon, in one direction, while dry, between rollers provided with card clothing, including stiff wire papillæ; while beating and brushing said fabric in the opposite direction, by rotating said rollers, and thus loosening the dried ink in the fabric and reforming a nap upon each side of said fabric.

5. The method of renewing used ink ribbon, formed of textile fabric impregnated with dried ink; which consists in progressing such inked ribbon, in one direction, while dry, between rollers provided with stiff papillæ; while beating and brushing said fabric in the opposite direction, by rotating said rollers, and thus loosening the dried ink in the fabric and reforming a nap upon each side of said fabric.

6. The step in a process of renewing used ink ribbon, impregnated with dried ink which consists in progressing such ribbon between opposed rollers having stiff papillæ in contact with opposite sides of the ribbon fabric, while said fabric is dry, and while rotating said rollers in a direction opposite to the traverse of said ribbon.

7. The step in a process of renewing used ink ribbon, which consists in progressing such ribbon between opposed rollers having stiff papillæ in contact with opposite sides of the ribbon fabric, while said fabric is dry, and while rotating said rollers.

In testimony whereof, I have hereunto signed my name at Burlington, New Jersey, this 19th day of June, 1925.

SAMUEL A. NEIDICH.