July 1, 1941. F. G. YANES 2,247,540

METHOD AND MEANS FOR TRANSFERRING LIQUID OR SOFT INK VALUES

Filed Feb. 14, 1940

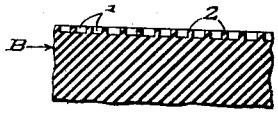


FIG. 2.

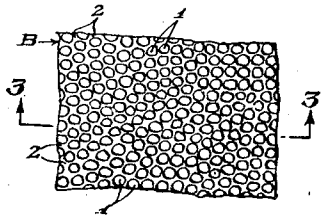


FIG. 1.

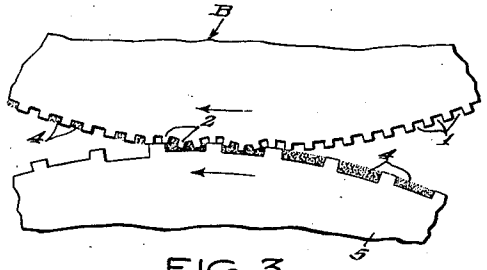


FIG. 3.

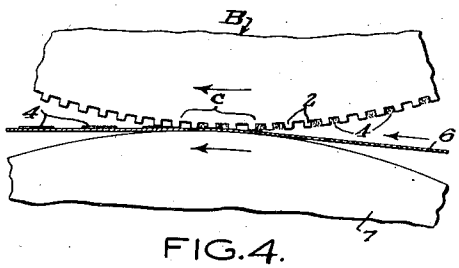


FIG. 4.

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METHOD AND MEANS FOR TRANSFERRING LIQUID OR SOFT INK VALUES

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4 Claims. (Cl. 101—170)

The present invention relates to method and means for transferring without smearing values formed by soft or liquid inks.

Such transferring involves two steps. One is to pick up the fluid values from one element. The other to deposit the same fluid values on another element. With methods and means known to the art one or the other step can be performed. Not both. For instance: an ordinary rubber transferring blanket can pick up fluid values held by an intaglio plate, but that blanket could not deposit such values on a printing blank without smearing the ink. In the same manner a grained intaglio plate can deposit on a blank fluid values held in the minute intaglio cells, but such a plate could not pick up the same from another plate. The means utilized by the invention both pick up fluid values, whether present in an intaglio plate or in any surface, and will also transfer such values on the printing blank, whether this be soft or hard, without smearing the ink.

The means utilized in the invention consist of a blanket made of rubber, or any other resilient and durable substance, whose surface is formed by thin walled minute pockets similar to photogravure cells. This combination provides a surface sufficiently elastic to penetrate and pick up the fluid ink from an intaglio plate, and, at the same time, when recovering its normal position it provides a grained or ruled cellular chamber in which the ink values are separately kept and distributed until the transferring takes place; then, when the value-carrying-blanket contacts the printing surface, the separation among the values is maintained because when the walls are suitably pressed against the blank the fluid ink values are bottled in the respective small compartments.

The art knows of several contrivances apparently similar to the means utilized in the invention, but they have never been intended to transfer liquid ink values nor would their structure and qualities permit to do so.

As to the useful purpose of the invention, the achievement is a possibility of great importance in the future of photo-composition and in actual rotary gravure. Among the advantages, pressure and load of rotary web machines will be reduced for a gain in printing speed, and even the printing apparatus will be simplified.

In the drawing:

Fig. 1 is a resilient blanket provided as example with pockets of the same depth in irregular distribution.

Fig. 2 is a section of Fig. 1.

Fig. 3 is a resilient blanket of the type shown in Fig. 1 picking up the ink from a screen-ruled rotary gravure record.

Fig. 4 is the resilient blanket depositing the ink values.

In Fig. 1 a rubber blanket B is presented. This blanket has irregularly distributed minute pockets 1, 1, separated by walls 2, 2. A section indicated by 3—3 is shown in Fig. 2.

In Fig. 3 an example of a blanket B of irregular texture is shown picking the ink 4 from a regular rotary gravure record 5.

In Fig. 4 the same elastic blanket B is shown when depositing the ink on a paper 6 supported by the printing bed 7. The contacting section C shows how the walls 2, 2 when compressed against the paper cause this to close the tiny cells and prevents the smearing of the ink 4.

Although the above is self explanatory for those skilled in the art is seems convenient to describe how the transferring takes place in order to show the essential structure of means and the steps of the method of the invention.

The first step of transferring is the picking up of the values. When a rubber blanket of grained or ruled cellular surface is compressed against a gravure plate, the outer structure of the blanket is changed on account of the resiliency of the walls forming the surface cells. In fact the outer cellular structure is modified under the pressure and the blanket partly behaves as an ordinary transferring blanket; thus it penetrates and picks up the fluid ink values from the cavities of the intaglio plate. It is easy to realize that should the walls of the cells be formed by a non-elastic substance the pick up if any would be irregular and unsatisfactory. All of which shows why the thin walls must be elastic, durable, and forming a body with the transferring blanket.

In the method of the invention there is an intermediate stage between the step of picking up the values and that of printing them on the blank. That stage is automatically produced as soon as the pressure ceases after the first step. When the elastic blanket regains its original shape it produces a suction which facilitates the picking up of the fluid ink, and when the cells, whether regular or irregular, spring back to the former position they carry in the fluid ink values which are thus conveniently distributed and stored in the respective zones of the cellular blanket.

The second step is now the deposition of the

values on the blank. Obviously, a very strong printing pressure would make the elastic cells practically disappear and the blanket, behaving as an ordinary one, would smear the liquid ink. But such pressure is only necessary when metallic intaglio plates are printed on paper in order to force the last into the hard intaglio cavities to pick up the ink. Not so in my case, for a gentle pressure would be sufficient for the ink to be forced out of the cells of the blanket and to become deposited on the blank. In the meantime, the outer surface of the thin walls, when suitably pressed against the blank, close the respective cells, and the fluid ink, sort of bottled within, is not smeared.

A very important feature of the method and means of the invention is that the cellular blanket being both elastic and forming a unit with the cells, does not necessarily require to be mounted and used in a printing apparatus; and as the pressure involved is relatively small the operations can be carried by hand at least up to certain sizes formerly requiring a complete mechanical installation.

I wish to be understood that the present disclosure is only for the purpose of illustration and that variations and equivalents must be considered within the scope of the invention as described in the following claims.

I claim:

1. For the transferring of fluid ink values, a rubber transferring element consisting of a body provided on its surface with a plurality of substantially uniform thin walled gravure cells, the thin walls separating the cells being also of rubber and forming part of said body.

2. In photogravure, an element for transferring fluid ink values without smearing the ink on the printing blank consisting of a body of resilient and durable matter, said body having a cellular and substantially uniform structure at its surface represented by thin walled pockets similar to gravure plate cavities, the thin walls of said pockets also resilient and durable and forming part of the transferring body.

3. The method of transferring fluid ink values from an intaglio plate onto a blank which consists in first providing a transferring blanket of a resilient and durable substance having a cellular and substantially uniform surface also resilient and durable forming a single body with the blanket; second, pressing the cellular side of the blanket against the inked and surface cleaned intaglio plate with sufficient pressure as to make the blanket penetrate the intaglio cavities and pick up the fluid ink; and third applying the blanket upon the blank with just the light pressure necessary to force the ink out of the cells and deposit the same on the blank.

4. The method of transferring soft ink values on a blank without smearing the ink and without resorting to the usual strong pressure, which consists in picking up said values in a resilient and durable body having a surface formed by substantially uniform cells separated by minute walls also durable and resilient, and then applying the cellular value-carrying-body against a blank with just the light pressure required to force the fluid ink out of the cells, the walls of the same when contacting the blank bottling the values and preventing the smearing of the soft ink.

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