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**(54) Method of screen printing and group of screens for use in this method**

Siebdruckverfahren und Siebdruckschablonengruppe zur Verwendung in diesem Verfahren

Procédé de sérigraphie et groupe d'écrans pour l'utilisation dans ce procédé

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(56) References cited:  
**EP-A- 0 761 434 WO-A-00/56062  
US-A- 5 515 779**

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## Description

**[0001]** The invention relates to a process for screen-printing one or more colours of ink on a substrate, wherein a halftone pattern is provided on a screen for each colour of ink and the ink is forced through the screen provided with the halftone pattern and onto the substrate.

**[0002]** Such a method is known, for example from EP-A-0 761 434. In screen-printing a colour image, the colour image is usually split into four halftone images having the colours cyan, black, magenta and yellow. Said four halftone images are each recorded in a film pattern or halftone pattern, which film pattern is transferred to a screen. Then the four screens are each used for printing the respective halftone image of the colour image on the substrate in the associated colour. It is a known fact that the interfering patterns of the halftone images being printed on each other by subsequent screens and interference between the pattern of the screen and the pattern of the film pattern of the halftone image may lead to moiré patterns.

**[0003]** It is known that the formation of damaging moiré patterns can be prevented by having the various halftone patterns include an angle of 30° with each other. It is usual, for example, to arrange the so-called halftone angles at angles of 15°, 45° and 75°, respectively, with respect to each other. As long as the three contrasting primary colours cyan, magenta and black include an angle of 30° with each other, no objectionable form of moiré will occur between said primary colours. The colour yellow, being a non-contrasting colour, can be oriented at an angle of 0° between the other colours. In the process according to EP-A-0 761 434, it is attempted to avoid damaging moiré patterns by using screens having mutually different geometries, with three different screens being used, for example, the second screen including an angle of 30° with the first screen and the third screen including an angle of 60° with the first screen. To avoid interference between the halftone pattern and the screen, this known process employs a so-called frequency-modulated halftone technique. Said frequency-modulated halftone technique is difficult to use in screen-printing, however, and leads to uncontrollable density variations in the midrange.

**[0004]** The object of the invention is to provide a process of the kind referred to in the introduction, in which the occurrence of damaging moiré patterns can be avoided when using an analog or amplitude-modulated halftone technique.

**[0005]** According to the invention, the process is to that end characterized in that the diagonal screen orientation of the screen and the orientation of the halftone pattern include an angle of +30° or -30°.

**[0006]** The invention is based on the perception that damaging moiré patterns can be avoided by a correct selection of the position of the halftone pattern relative to the diagonal screen orientation, wherein an angle of +30° or -30° is preferred. The term "diagonal screen ori-

entation" is understood to mean the diagonal that includes an angle of 45° with the orientation of the screen wires.

**[0007]** According to the invention it is furthermore of major importance to select the correct proportion between the number of wires per centimetre of the screen and the number of lines per centimetre of the halftone pattern. According to the invention, it is advantageous if the number of lines per centimetre of the halftone pattern varies within a range whose upper limit is defined by the step function value of  $(Z/n) \times \cos 30^\circ$  or  $Z/2 \times (1/n + 1/n+1) \times \cos 30^\circ$ , wherein  $Z$  is the number of wires per centimetre of the screen and  $n$  is an integer, plus one line, and the lower limit is defined by said step function value minus two lines. Preferably, the number of lines per centimetre of the halftone pattern equals the aforesaid step function value.

**[0008]** It is important in this connection that the number of wires per centimetre of the screen be determined after tensioning of the screen has taken place.

**[0009]** According to the invention, the best results in one-colour printing are obtained if the diagonal screen orientation is 75° and the halftone pattern orientation is 45°.

**[0010]** According to the invention, two types of screens can be used in four-colour printing, which screens have a diagonal screen orientation of 45° and 15°, respectively, the orientation of the halftone patterns being 75° or 15°, respectively, with the screens of the first type, and the orientation of the halftone pattern(s) being 45°, 15° or 0° with the screens of the second type. One set of screens thus comprises screen wires tensioned at right angles, whilst the other set of screens comprises screen wires tensioned at an angle of 30°. Screens having a diagonal screen orientation of 45° may be used for three colours, for example cyan, black and yellow, with the halftone patterns for two colours, for example black and yellow, being oriented at an identical angle of 15°, whilst a screen having a diagonal screen orientation of 15° or 75° may be used for one colour, for example magenta, with the halftone pattern for said colour being oriented at an angle of 45°.

**[0011]** If the ratio between the number of wires per centimetre of the screen and the number of lines per centimetre of the halftone pattern is higher than five, it is possible to use the same type of screens having a diagonal screen orientation of 45° for all colours, in which case the halftone patterns are arranged at angles of 15°, 45° and 75°.

**[0012]** Alternatively, two types of screens may be used in four-colour printing, wherein the screens of the first type have a diagonal screen orientation of 45° and wherein a diagonal screen orientation of 15° is simulated with the screens of the second type by selecting the number of wires per centimetre  $Z_2$  of the screens of the second type so that the ratio of the number of wires per centimetre  $Z_1$  of the screens of the first type to  $Z_2$  corresponds to  $\cos 30^\circ$  or  $1/\cos 30^\circ$ , or that a ratio corresponding to  $\cos$

30° or  $1/\cos 30^\circ$  is obtained by combining a diagonal screen orientation between 45° and 15° with the proportion  $Z_1:Z_2$ . This alternative makes it possible to simulate the desired angle of 30° between the diagonal screen orientations when large screen dimensions are used, in which case it is not possible to tension the screen at an angle of 30°, for example because the screening cloth does not have the required dimensions.

**[0013]** The invention furthermore provides a group of screens for use in the above-described screen printing process, wherein each screen has a diagonal screen orientation, wherein according to the invention the group of screens comprises two types of screens, with the diagonal screen orientations of the screens or the diagonal screen orientation and the simulated diagonal screen orientation of the screens of the two different types including an angle of 30°.

**[0014]** The invention will now be explained in more detail with reference to the drawing. In the drawing:

Fig. 1 very schematically shows a screen that is tensioned at right angles, which screen is used for four-colour printing in one embodiment of the process according to the invention; and

Fig. 2 shows a screen that is tensioned at an angle of 30°, which is used in this embodiment of the process according to the invention.

**[0015]** Figs. 1 and 2 are schematic, strongly enlarged views of two screens 1,2, screen 1 being tensioned at right angles and screen 2 being tensioned at 30°. This means that the screen wires 3 of the screen 1 extend perpendicularly to and parallel to the frame members 4, whilst the screen wires 3 of the screen 2 include and angle of 30° with the horizontal frame member 4 in the drawing.

**[0016]** According to this embodiment of the process according to the invention, two screens 1 and two screens 2 are used for screen-printing an image in four-colour print. The screens 1 are used for printing the halftone images in cyan and black, for example. The film pattern (or dot pattern) of the colour cyan is provided at an angle of 75° on the first screen 1, for example, as indicated by the line C in Fig. 1. The halftone pattern of the colour black is provided at an angle of 15° on the second screen 1 in that case, as is indicated by the line B in Fig. 1. This means that the cyan and black halftone patterns include an angle of +30° and -30°, respectively, with the diagonal screen orientation of 45°. The diagonal screen orientation is indicated by the hatched screen openings in the drawing.

**[0017]** Similarly, the patterns of the colours yellow and magenta are arranged at an angle of 15° (the line Y in Fig. 2) and 45° (the line M in Fig. 2), respectively, on the first and the second screen 2. Said halftone patterns, too, include an angle of +30° and -30° with the diagonal screen orientation of 75°. In addition, the three contrasting colours cyan, black and magenta include an angle of

30° with each other as well. In this way the occurrence of damaging moiré patterns is entirely avoided. In this case the colour yellow is arranged at the same angle as the colour black, which does not present any problems in the case of a normal colour separation. If a PCR or UCR colour separation is used, the colour yellow is arranged at an angle of 0°.

**[0018]** Alternatively, the three colours cyan, black and yellow can be printed by means of three screens 1 tensioned at right angles, with the halftone patterns being arranged at angles of 75°, 15° and 15°, and the colour magenta is printed by means of a screen 2 tensioned at an angle, with the halftone pattern extending at an angle of 45°.

**[0019]** According to the invention it is furthermore of major importance to select the correct ratio between the number of wires per centimetre of the screen and the number of lines per centimetre of the halftone pattern. According to the invention, the number of lines per centimetre of the halftone pattern varies within a range whose upper limit is defined by the step function value (entier function or INT) of  $(Z/n) \times \cos 30^\circ$  or  $Z/2 \times (1/n + 1/(n+1)) \times \cos 30^\circ$ , wherein Z is the number of wires per centimetre of the screen and n is an integer, plus one line, and whose lower limit is defined by said step function value minus two lines. The number n is indicated as the ratio value, the ratio between the number of screen wires and the number of patterns lines, i.e. the number of screen wires per dot. By using this factor ( $\cos 30^\circ$ ), the position of the dot pattern with respect to the diagonal screen orientation is taken into account in the determination of the ratio screen wires/pattern. For a ratio value higher than  $n=3$ , the function  $(Z/n) \times \cos 30^\circ$  will suffice for determining the range for the number of pattern lines.

**[0020]** According to the invention, the number of wires per centimetre after tensioning of the screen is preferably taken as a starting point for determining the number of wires per centimetre of the screen. Tests have shown that the number of wires per centimetre of the screen after tensioning may be a few per cent lower than the number of wires per centimetre that is stated for the screen material that is used.

**[0021]** By way of example, a screen comprising 165 wires is taken as a starting point. Measurements have shown that the screen comprises an average 152.5 wires per centimetre after tensioning, using a usual tensioning force. At  $n=2$ , a value of  $\text{INT}(76,25 \times \cos 30^\circ) = 66$  applies for determining the number of lines per centimetre of the halftone pattern, so that the upper limit is 67 lines per centimetre and the lower limit is 64 lines per centimetre. The best results are obtained with 66 lines per centimetre. When these calculations are carried out for  $n=1$ ,  $n=3$ ,  $n=4$ ,  $n=5$  and  $n=6$ , the pattern values with which the best results are obtained are: 22 ( $n=6$ ), 26 ( $n=5$ ), 33 ( $n=4$ ), 44 ( $n=3$ ), 66 ( $n=2$ ) and 132 ( $n=1$ ). The associated ranges for the pattern value are: 20-23 ( $n=6$ ), 24-27 ( $n=5$ ), 31-34 ( $n=4$ ), 42-45 ( $n=3$ ), 64-67 ( $n=2$ ) and 128-133 ( $n=1$ ). In the ranges between  $n=1$  and  $n=2$  on the one hand and

$n=2$  and  $n=3$  on the other hand, suitable pattern values can furthermore be found with the function  $\text{INT}(Z/2 \times (1/n + 1/n+1) \times \cos 30^\circ)$ . Between  $n=1$  and  $n=2$  follows 97-100 and between  $n=2$  and  $n=3$  follows 53-56.

**[0022]** According to the invention, the use of two types of screens can be rendered possible in an alternative manner. The screens of the first type are tensioned at right angles having a diagonal screen orientation of  $45^\circ$ . The angle of  $30^\circ$  between the diagonal screen orientations is simulated by simulating a diagonal screen orientation of  $15^\circ$  with the screens of the second type. To that end, the number of wires per centimetre  $Z_2$  of the screens of the second type is selected so that the ratio between the number of wires per centimetre  $Z_1$  of the screens of the first type and  $Z_2$  corresponds to  $\cos 30^\circ$  or  $1/\cos 30^\circ$ , wherein the screens of the second type are also tensioned at right angles. This means that coarser or finer screens are used for the screens of the second type. The diagonal screen orientation of  $15^\circ$  can also be simulated by composing the ratio corresponding to  $\cos 30^\circ$  or  $1/\cos 30^\circ$  from a combination of a diagonal screen orientation between  $45^\circ$  and  $15^\circ$  and the proportion  $Z_1 : Z_2$ .

**[0023]** It is noted that tests have shown that if a ratio higher than  $n=5$  is used, the same type of screens having a diagonal screen orientation of  $45^\circ$  can be used for all colours, in which case the patterns are arranged at angles of  $15^\circ$ ,  $45^\circ$  and  $75^\circ$ .

**[0024]** Where mention is made of an angle of  $30^\circ$  in the foregoing, this does not mean that this angle is limited to an angle of exactly  $30^\circ$ . A deviation of approximately  $+3^\circ$  or  $-3^\circ$  is possible without this leading to highly objectionable moiré patterns.

## Claims

1. A process for screen printing one or more colours of ink on a substrate, wherein a halftone pattern is arranged on a screen for each colour of ink and the ink is forced through the screen provided with the halftone pattern and onto the substrate, **characterized in that** the diagonal screen orientation of the screen and the orientation of the halftone pattern include an angle of  $+30^\circ$  or  $-30^\circ$ .
2. A process according to claim 1, wherein the number of lines per centimetre of the halftone pattern varies within a range whose upper limit is defined by the step function value of  $(Z/n) \times \cos 30^\circ$  or  $Z/2 \times (1/n + 1/n+1) \times \cos 30^\circ$ , wherein  $Z$  is the number of wires per centimetre of the screen and  $n$  is an integer, plus one line, and the lower limit is defined by said step function value minus two lines.
3. A process according to claim 2, wherein the number of lines per centimetre of the halftone pattern preferably equals the aforesaid step function value.
4. A process according to claim 1, 2 or 3, wherein the diagonal screen orientation is  $75^\circ$  and the pattern orientation is  $45^\circ$  in one-colour printing.
5. A process according to any one of the preceding claims, wherein two types of screens are used in four-colour printing, which screens have a diagonal screen orientation of  $45^\circ$  and  $15^\circ$ , respectively, the orientation of the halftone patterns being  $75^\circ$  or  $15^\circ$ , respectively, with the screens of the first type, and the orientation of the halftone pattern(s) being  $45^\circ$ ,  $15^\circ$  or  $0^\circ$  with the screens of the second type.
6. A process according to claim 5, wherein screens having a diagonal screen orientation of  $45^\circ$  are used for three colours, for example cyan, black and yellow, with the halftone patterns for two colours, for example black and yellow, being oriented at an identical angle of  $15^\circ$ , whilst a screen having a diagonal screen orientation of  $15^\circ$  or  $75^\circ$  is used for one colour, for example magenta, with the halftone pattern for said colour being oriented at an angle of  $45^\circ$ .
7. A process according to any one of the preceding claims, wherein it is possible to use the same type of screens having a diagonal screen orientation of  $45^\circ$  for all colours if the ratio between the number of wires per centimetre of the screen and the number of lines per centimetre of the halftone pattern is higher than five, in which case the halftone patterns are arranged at angles of  $15^\circ$ ,  $45^\circ$  and  $75^\circ$ .
8. A process according to any one of the preceding claims, wherein the screens of the first type have a diagonal screen orientation of  $45^\circ$  and wherein a diagonal screen orientation of  $15^\circ$  is simulated with the screens of the second type by selecting the number of wires per centimetre  $Z_2$  of the screens of the second type so that the ratio of the number of wires per centimetre  $Z_1$  of the screens of the first type to  $Z_2$  corresponds to  $\cos 30^\circ$  or  $1/\cos 30^\circ$ , or that a ratio corresponding to  $\cos 30^\circ$  or  $1/\cos 30^\circ$  is obtained by combining a diagonal screen orientation between  $45^\circ$  and  $15^\circ$  with the proportion  $Z_1:Z_2$ .
9. A process according to any one of the claims 3-8, wherein the number of wires per centimetre of the screen is the number of wires after the screen has been tensioned.
10. A group of screens for use in a screen printing process according to any one of the preceding claims, wherein each screen has a diagonal screen orientation, **characterized in that** the group of screens comprises two types of screens, with the diagonal screen orientations of the screens or the diagonal screen orientation and the simulated diagonal screen orientation of the screens of the two different

types including an angle of 30°.

11. A group of screens according to claim 10, wherein the diagonal screen orientation of the screens of the first type is 45° and that of the screens of the second type is 75°, or wherein the diagonal screen orientation of the screens of the first type is 45° and wherein the second type of screens comprises coarser or finer screens than the first type of screens, said screens of the second type having a diagonal screen orientation between 45° and 15°.

#### Patentansprüche

1. Verfahren zum Siebdrucken von einer einzelnen oder von mehreren Farben aus Tinte auf ein Substrat, wobei ein Halbton-Muster auf einem Sieb für jede Tinten-Farbe angeordnet wird und die Tinte durch das mit dem Halbton-Muster versehene Sieb hindurch und auf das Substrat gedrückt wird, **dadurch gekennzeichnet, dass** die Diagonal-Sieb-Ausrichtung des Siebes und die Ausrichtung des Halbton-Musters einen Winkel von +30° oder -30° einschließt.
2. Verfahren gemäß Anspruch 1, wobei die Anzahl von Linien pro Zentimeter des Halbton-Musters in einem Bereich variiert, dessen obere Grenze mittels des Stufenfunktions-Werts von  $(Z/n) \times \cos 30^\circ$  oder  $Z/2 \times (1/n + 1/(n+1)) \times \cos 30^\circ$  definiert wird, wobei Z die Anzahl der Drähte pro Zentimeter des Siebes ist und n eine ganze Zahl plus eine Linie ist, und die untere Grenze mittels des Stufenfunktions-Werts minus zwei Linien definiert wird.
3. Verfahren gemäß Anspruch 2, wobei die Anzahl von Linien pro Zentimeter des Halbton-Musters vorzugsweise gleich dem vorher erwähnten Stufenfunktions-Wert ist.
4. Verfahren gemäß Anspruch 1, 2 oder 3, wobei bei einem einfarbigen Druck die diagonale Sieb-Ausrichtung 75° ist und die Muster-Ausrichtung 45° ist.
5. Verfahren gemäß einem der vorhergehenden Ansprüche, wobei bei einem vierfarbigen Druck zwei Sieb-Typen verwendet werden, wobei die Siebe jeweils eine diagonale Sieb-Ausrichtung von 45° und 15° haben, wobei die Ausrichtung des Halbton-Musters jeweils 75° oder 15° ist, wobei die Siebe des ersten Typs und die Ausrichtung des (der) Halbton-Musters (-Muster) 45°, 15° oder 0° zu den Sieben des zweiten Typs ist.
6. Verfahren gemäß Anspruch 5, wobei die Siebe, welche eine diagonale Sieb-Ausrichtung von 45° haben, für drei Farben verwendet werden, beispielsweise

Cyan, Schwarz und Gelb, wobei die Halbton-Muster für zwei Farben, beispielsweise Schwarz und Gelb, in einem identischen Winkel von 15° ausgerichtet werden, wobei ein Sieb mit einer diagonalen Sieb-Ausrichtung von 15° oder 75° für eine Farbe, beispielsweise Magenta, verwendet wird, wobei das Halbton-Muster für jene Farbe in einem Winkel von 45° ausgerichtet wird.

7. Verfahren gemäß einem der vorhergehenden Ansprüche, wobei es möglich ist, den gleichen Typ von Sieben zu verwenden, welche eine diagonale Sieb-Ausrichtung von 45° für alle Farben haben, wenn der Quotient zwischen der Anzahl von Drähten pro Zentimeter des Siebes und der Anzahl der Linien pro Zentimeter des Halbton-Musters größer als fünf ist, in welchem Fall die Halbton-Muster in Winkeln von 15°, 45° und 75° angeordnet werden.
8. Verfahren gemäß einem der vorhergehenden Ansprüche, wobei die Siebe des ersten Typs eine diagonale Sieb-Ausrichtung von 45° haben und wobei eine diagonale Sieb-Ausrichtung von 15° mit den Sieben des zweiten Typs simuliert wird, indem die Anzahl von Drähten pro Zentimeter  $Z_2$  des Siebs des zweiten Typs so selektiert wird, dass der Quotient der Anzahl von Drähten pro Zentimeter  $Z_1$  der Siebe des ersten Typs mit  $Z_2$  mit  $\cos 30^\circ$  oder  $1/\cos 30^\circ$  korrespondiert oder dass ein Quotient, welcher mit  $\cos 30^\circ$  oder  $1/\cos 30^\circ$  korrespondiert, erzielt wird, indem eine diagonale Sieb-Ausrichtung zwischen 45° und 15° mit dem Verhältnis  $Z_1:Z_2$  kombiniert wird.
9. Verfahren gemäß einem der Ansprüche 3-8, wobei die Anzahl der Drähte pro Zentimeter des Siebes die Anzahl der Drähte ist, nach dem das Sieb gespannt worden ist.
10. Sieb-Satz zum Verwenden in einem Siebdruck-Verfahren gemäß einem der vorhergehenden Ansprüche, wobei jedes Sieb eine diagonale Sieb-Ausrichtung hat, **dadurch gekennzeichnet, dass** der Sieb-Satz zwei Typen von Sieben aufweist, wobei die diagonale Sieb-Ausrichtungen der Siebe oder die diagonale Siebausrichtung und die simulierte diagonale Siebausrichtung der Siebe der beiden unterschiedlichen Typen einen Winkel von 30° umschließen.
11. Sieb-Satz gemäß Anspruch 10, wobei die diagonale Sieb-Ausrichtung der Siebe des ersten Typs 45° und die der Siebe des zweiten Typs 75° ist, oder wobei die diagonale Sieb-Ausrichtung der Siebe des ersten Typs 45° ist und wobei der zweite Typ von Sieben ein gröberes oder ein feineres Raster als der erste Typ von Sieben aufweist, wobei die Siebe des zweiten Typs eine diagonale Siebausrichtung zwischen 45° und 15° umschließen.

## Revendications

1. Procédé de sérigraphie d'une ou plusieurs couleurs d'encre sur un substrat, dans lequel un motif demi-ton est agencé sur un écran pour chaque couleur d'encre et l'encre est introduite à force au travers de l'écran muni du motif demi-ton et sur le substrat, **caractérisé en ce que** l'orientation d'écran en diagonale de l'écran et l'orientation du motif demi-ton font un angle de  $+30^\circ$  ou  $-30^\circ$ . 5
2. Procédé selon la revendication 1, dans lequel le nombre de lignes par centimètre du motif demi-ton varie dans une gamme dont la limite supérieure est définie par la valeur de fonction échelonnée de  $(Z/n) \times \cos 30^\circ$  ou  $Z/2 \times (1/n + 1/n + 1) \times \cos 30^\circ$ , où Z est le nombre de fils par centimètre de l'écran et n est un entier plus une ligne et la limite inférieure est définie par ladite valeur de fonction échelonnée moins deux lignes. 10
3. Procédé selon la revendication 2, dans lequel le nombre de lignes par centimètre du motif demi-ton équivaut, de préférence, à la valeur de fonction échelonnée précitée. 15
4. Procédé selon la revendication 1, 2 ou 3, dans lequel l'orientation d'écran en diagonale est de  $75^\circ$  et l'orientation du motif est de  $45^\circ$  dans une impression à une couleur. 20
5. Procédé selon l'une quelconque des revendications précédentes, dans lequel on utilise deux types d'écrans dans une impression à quatre couleurs, lesquels écrans ont une orientation d'écran en diagonale de  $45^\circ$  et respectivement  $15^\circ$ , l'orientation des motifs demi-ton étant de  $75^\circ$  ou respectivement  $15^\circ$ , les écrans du premier type et l'orientation du/des motifs demi-ton étant de  $45^\circ$ ,  $15^\circ$  ou  $0^\circ$  avec les écrans du deuxième type. 25
6. Procédé selon la revendication 5, dans lequel on utilise des écrans ayant une orientation d'écran en diagonale de  $45^\circ$  pour trois couleurs, par exemple cyan, noir et jaune, les motifs demi-ton pour deux couleurs, par exemple noir et jaune, étant orientés selon un angle identique de  $15^\circ$  tandis que l'on utilise pour une couleur, par exemple magenta, un écran ayant une orientation d'écran en diagonale de  $15^\circ$  ou  $75^\circ$ , le motif demi-ton pour ladite couleur étant orienté selon un angle de  $45^\circ$ . 30
7. Procédé selon l'une quelconque des revendications précédentes, dans lequel il est possible d'utiliser le même type d'écran ayant une orientation d'écran en diagonale de  $45^\circ$  pour toutes les couleurs si le rapport entre le nombre de fils par centimètre de l'écran et le nombre de lignes par centimètre du motif demi-ton est supérieur à cinq, auquel cas les motifs demi-ton sont agencés selon des angles de  $15^\circ$ ,  $45^\circ$  et  $75^\circ$ . 35
8. Procédé selon l'une quelconque des revendications précédentes, dans lequel les écrans du premier type ont une orientation d'écran en diagonale de  $45^\circ$  et dans lequel une orientation d'écran en diagonale de  $15^\circ$  est simulée avec les écrans du deuxième type en choisissant le nombre de fils par centimètre  $Z_2$  des écrans du deuxième type, de sorte que le rapport du nombre de fils par centimètre  $Z_1$  des écrans du premier type à  $Z_2$  corresponde à  $\cos 30^\circ$  ou  $1/\cos 30^\circ$  ou qu'un rapport correspondant à  $\cos 30^\circ$  ou  $1/\cos 30^\circ$  soit obtenu en combinant une orientation d'écran en diagonale entre  $45^\circ$  et  $15^\circ$  avec la proportion  $Z_1:Z_2$ . 40
9. Procédé selon l'une quelconque des revendications 3 à 8, dans lequel le nombre de fils par centimètre de l'écran est le nombre de fils après que l'écran ait été mis sous tension. 45
10. Groupe d'écrans destinés à être utilisés dans un procédé de sérigraphie selon l'une quelconque des revendications précédentes, dans lequel chaque écran a une orientation d'écran en diagonale, **caractérisé en ce que** le groupe d'écrans comporte deux types d'écrans, les orientations d'écran en diagonale des écrans ou l'orientation d'écran en diagonale et l'orientation d'écran en diagonale simulée des écrans des deux types différents faisant un angle de  $30^\circ$ . 50
11. Groupe d'écrans selon la revendication 10, dans lequel l'orientation d'écran en diagonale des écrans du premier type est de  $45^\circ$  et celle des écrans du deuxième type est de  $75^\circ$  ou dans lequel l'orientation d'écran en diagonale des écrans du premier type est de  $45^\circ$  et dans lequel le deuxième type d'écrans comprend des écrans plus grossiers ou plus fins que le premier type d'écrans, lesdits écrans du deuxième type ayant une orientation d'écran en diagonale comprise entre  $45^\circ$  et  $15^\circ$ . 55

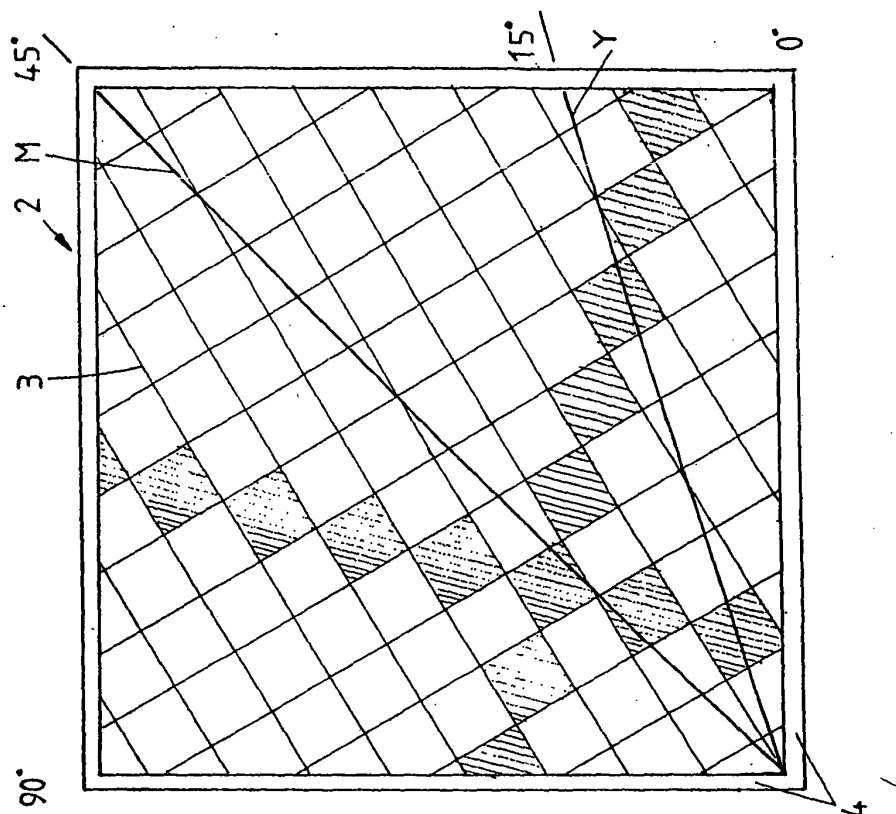


Fig. 2

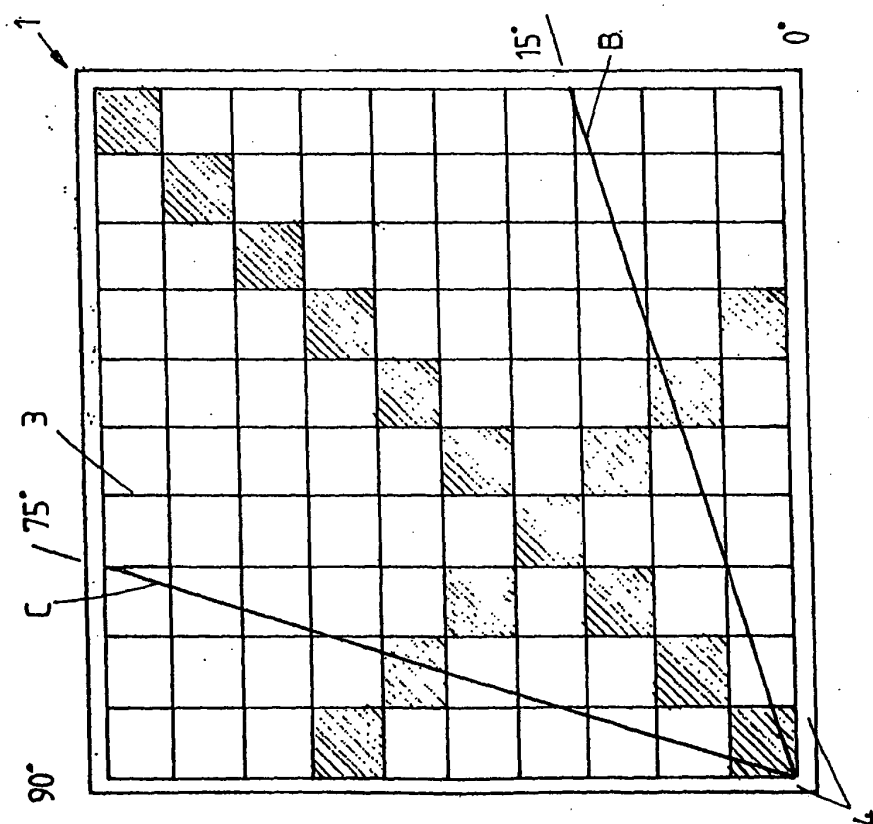


Fig. 1