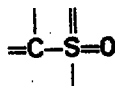


Description

The invention relates to a process of electrolytically producing a screen by subjecting a screen skeleton, which has been formed upon a matrix in a first electrolytic bath and subsequently stripped from the matrix, to an electrolysis in a second electrolytic bath in the presence of at least one brightener.

Such a process of this type for producing a screen, is known from US—A—2.226.384. In this known process a screen skeleton is produced upon a matrix provided with a stripping means, such as beeswax, the structure of said matrix corresponding with that of the screen to be produced. The screen skeleton as obtained by electrolytically depositing metal is subsequently stripped from the matrix and finally subjected to an electrolysis in the presence of a brightener, if any. In this process electrolytic baths may also be used, comprising nickel salts and optionally brighteners of the first class, the molecules of which contain a



group, examples of which are e.g. sulfonic acids, mono- and dibasic sulfonic acids, sulfonic acid esters, sulfonamides, sulfonimides, sulfinic acids and sulfones.

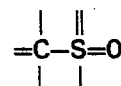
Similar processes are described in the book of Spiro, *Electroforming*, Robert Draper 1968, Teddington pages 180—183.

Moreover DE—A—2.540.434 discloses the step of electrolytically forming an auxiliary screen upon a matrix in a first electrolytic bath, subjecting the matrix with the auxiliary screen to the action of a second electrolytic bath thereby forming a top screen and after having removed the auxiliary screen and the top screen from the matrix, the assembly is subjected to the action of a third electrolytic bath in order to provide the bottom side of the top screen with a metal deposit.

A great disadvantage of the known processes is that the dimensions of the lands in the screen skeleton will grow throughout by the nickel deposit, causing said lands to obtain a round cross section, giving rise to a restriction of the size of the apertures in the screen to be produced, so that the passage of said screens is hampered.

The present invention aims to provide a process for electrolytically producing a screen, which process does not present said disadvantages.

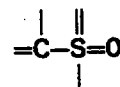
This object is achieved in accordance with the present invention in that the second electrolytic bath, comprises at least one organic compound having a least one unsaturated bond, not belonging to a



group, and presenting the properties of a second class brightener. In this process the increase of the deposit of metal upon the screen skeleton occurs in a plane being substantially perpendicular to the surface of the screen so that the width of the openings or apertures in the screen skeleton will decrease less rapidly, whilst on the other hand a strong screen is formed, as the lands of the screen skeleton are strengthened by deposits extending perpendicularly to the screen surface.

It is very surprising that organic compounds presenting properties of a second class brightener, which are known for their levelling action (*Het Ingenieursblad* 45, 282, 1976) and thus involving a strong deposit growth in the plane of the screen skeleton upon a matrix, will not give rise to a particular deposit in the plane of the screen skeleton when said skeleton is subjected to electrolysis in an electrolytic bath, but that said deposit growth occurs substantially in a plane perpendicular to the surface of the screen skeleton, involving all the advantages inherent therewith.

Unsaturated organic compounds are used, comprising at least a double or a triple bond, provided that said double or triple bond does not belong to a



group.

Organic compounds which may be suitably applied in the process according to the invention, are a butyne diol or an ethylene cyanohydrin.

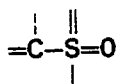
When the latter compounds are applied an optimum growth of deposits upon the lands in the screen skeleton perpendicular to said screen skeleton, will occur.

In a preferred embodiment of the process in accordance with the invention a cylindrical screen is produced by subjecting a cylindrical screen skeleton having been formed upon a cylindrical matrix in a first electrolytic bath and stripped from the matrix to an electrolysis in the second electrolytic bath.

On producing cylindrical screens of this type, the matrix advantageously comprises a beeswax as a stripping means.

The invention also relates to a screen, obtained by subjecting a screen skeleton electrolytically formed upon a matrix in a first electrolytic bath and subsequently stripped from said matrix, to an electrolysis in a second electrolytic bath, in the presence of at least one brightener, characterized in that the second

electrolytic bath comprised at least one organic compound having at least one unsaturated bond, not belonging to a



group, and presenting the properties of a second class brightener, the apertures in the finished screen substantially corresponding with the apertures in the starting screen skeleton.

Such screens present physicochemical properties allowing to show that the screen has been obtained by the lastmentioned measures.

Preferably the screen skeleton is a cylindrical screen skeleton.

The invention thus relates to a screen, more particularly a cylindrical screen, obtained by applying the process in accordance with the present invention.

The present invention will be illustrated by way of example only, on the basis of an embodiment in the drawing, wherein:

Fig. 1 is a schematic view of the manner in which a screen skeleton is stripped from a matrix;

Fig. 2 is a cross section of the stripped off screen skeleton;

Fig. 3 is a section through a screen obtained from a screen skeleton, by subjecting said skeleton to an electrolysis in the presence of a compound, according to the invention;

Fig. 4 is a cross section through a screen formed upon a matrix in the presence of a compound, according to the invention;

Fig. 5 is a section through a screen obtained from a screen skeleton by subjecting the screen skeleton to an electrolysis in a bath comprising nickel salts, and brighteners of the first class, if any, and not a compound according to the invention.

Fig. 1 shows a matrix 1 consisting of a plate 1 of electrically conductive material, e.g. nickel. Said plate comprises depressions 8 formed by etching, while separating said depressions by means of ribs 2, 3. The depressions 8 are filled with a di-electric material, such as e.g. an asphalt material or a bituminous material 4.

The separating or stripping ribs 2 and 3 have previously been provided with a layer of beeswax 5, in order to facilitate a subsequent stripping of the formed screen skeleton from the matrix.

It will be obvious that on placing plate 1 as a cathode in an electrolytic bath together with a suitable anode and an electric source, a deposit will be formed upon the ribs 2, 3. The screen skeleton formed in this manner therefore comprises lands 6 and 7 running transversely with respect to one another.

If the plate 1 with the screen skeleton 9 formed thereon, is subsequently placed in an electrolytic bath comprising brighteners of the first class, that is to say brighteners in the form

of e.g. an alkyl naphthalene sulfonic acid, naphthalene disulfonic acids, diphenyl sulfonates or the like compounds, together with an acetylene alcohol (a compound as used in the invention), a screen is finally obtained, the lands of which preferably have been grown in the direction of the surface of the screen, while decreasing the dimensions of the openings or apertures of the screen.

When the formed screen skeleton, if the latter is still very thin as yet, is stripped from the matrix, and is suspended in an electrolytic bath as a cathode, in the presence of an acetylene alcohol, the surprising effect can be observed that the growth of deposits upon the lands will preferably occur in a direction perpendicular to the screen skeleton surface.

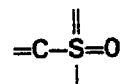
Similar results may also be observed with varying organic unsaturated compounds, known in the art as brighteners of the second class.

Example I

Upon a nickel plate 1, comprising the desired screen pattern and being provided with beeswax as a separating agent, a screen skeleton is deposited by means of electrolysis. Said screen skeleton is removed when the thickness of the lands in the screen skeleton amounts to 30 micron.

The obtained screen skeleton of nickel metal is subsequently suspended in an electrolytic nickel bath as known in the art and as a cathode, subjected to an electrolysis.

Said electrolysis is carried out in the presence of an organic compound, comprising a triple bond in the molecule, apart from a



group, if present. The compound in this case consists of ethylene cyanohydrin, comprising a triple bond between the carbon and nitrogen atom.

In this manner a screen is obtained which is provided with excellent large openings, the dimensions of which are not or only slightly, smaller than the openings as present in the screen skeleton.

When the experiment is repeated by placing the plate with the skeleton grown thereon, in a nickel bath, in the presence of the same compound, a screen is obtained, the thickness of which corresponds with that of the first mentioned screen, the openings of the second screen, however, being smaller, due to a deposit of nickel, preferably in the direction of the surface of the screen.

Example II

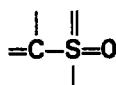
Example I is repeated, but the plate is replaced by a cylinder, having a chromium surface. The cylindrical screen is removed when

the thickness of the lands in the screen skeleton amounts for instance to 30 micron.

In this manner a cylindrical screen is obtained comprising excellent large openings, the dimensions of which are not, or only slightly, smaller than those in the screen skeleton.

Claims

1. Process of electrolytically producing a screen by subjecting a screen skeleton, which has been formed upon a matrix in a first electrolytic bath and subsequently stripped from the matrix, to an electrolysis in a second electrolytic bath in the presence of at least one brightener, characterized in that the second electrolytic bath, comprises at least one organic compound having at least one unsaturated bond, not belonging to a



group, and presenting the properties of a second class brightener.

2. Process according to claim 1, characterized in that the organic compound comprises at least a double or triple bond.

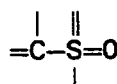
3. Process according to claim 1 or 2, characterized in that the compound is a butyne diol.

4. Process according to claims 1 or 2, characterized in that the compound is an ethylene cyanohydrin.

5. Process according to any one of the preceding claims, characterized in that a cylindrical screen is produced by subjecting a cylindrical screen skeleton having been formed upon a cylindrical matrix in a first electrolytic bath and stripped from the matrix to an electrolysis in the second electrolytic bath.

6. Process according to any one of the preceding claims, characterized in that the screen skeleton is formed upon a matrix being provided with a thin layer of a separating agent, such as beeswax.

7. A screen, obtained by subjecting a screen skeleton, (9) electrolytically formed upon a matrix (1) in a first electrolytic bath and subsequently stripped from said matrix, to an electrolysis in a second electrolytic bath, in the presence of at least one brightener, characterized in that the second electrolytic bath comprised at least one organic compound having at least one unsaturated bond, not belonging to a

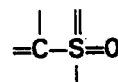


group, and presenting the properties of a second class brightener, the apertures in the finished screen substantially corresponding with the apertures in the starting screen skeleton.

8. A screen, according to claim 7, characterized in that the screen skeleton is a cylindrical screen skeleton.

Revendications

1. Procédé d'obtention d'un écran par voie électrolytique en soumettant une ossature d'écran formée sur une matrice dans un premier bain électrolytique en ensuite démoulée de la matrice, à une électrolyse dans un second bain en présence d'au moins un brillant, caractérisé en ce que le second bain électrolytique comprend au moins un composé organique ayant au moins une liaison insaturée, n'appartenant à un groupe



et présentant les propriétés d'un brillant de deuxième classe.

2. Procédé selon la revendication 1, caractérisé en ce que le composé organique comprend au moins une double ou une triple liaison.

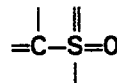
3. Procédé selon la revendication 1 ou 2, caractérisé en ce que le composé est un butyne-diol.

4. Procédé selon la revendications 1 ou 2, caractérisé en ce que le composé est une éthylène cyanhydrine.

5. Procédé selon l'une des revendications précédentes, caractérisé en ce qu'un écran cylindrique est obtenu en soumettant une ossature d'écran cylindrique formée sur une matrice cylindrique dans un premier bain électrolytique et démoulée de la matrice, à une électrolyse dans le second bain électrolytique.

6. Procédé selon l'une des revendications précédentes, caractérisé en ce que l'ossature d'écran est formée sur une matrice munie d'une mince couche d'un agent de séparation tel que de la cire d'abeilles.

7. Un écran obtenu en soumettant une ossature d'écran (9) formée par voie électrolytique sur une matrice (1) dans un premier bain électrolytique et démoulée ensuite de ladite matrice, à une électrolyse dans un second bain électrolytique en présence d'au moins un brillant caractérisé en ce que le second bain électrolytique comprend au moins un composé organique ayant au moins une liaison insaturée, n'appartenant pas à un groupe



et présentant les propriétés d'un brillant de deuxième classe, les ouvertures dans l'écran fini correspondant sensiblement aux ouvertures dans l'ossature d'écran de départ.

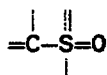
8. Un écran selon la revendication 7, caracté-

the thickness of the lands in the screen skeleton amounts for instance to 30 micron.

In this manner a cylindrical screen is obtained comprising excellent large openings, the dimensions of which are not, or only slightly, smaller than those in the screen skeleton.

Claims

1. Process of electrolytically producing a screen by subjecting a screen skeleton, which has been formed upon a matrix in a first electrolytic bath and subsequently stripped from the matrix, to an electrolysis in a second electrolytic bath in the presence of at least one brightener, characterized in that the second electrolytic bath, comprises at least one organic compound having at least one unsaturated bond, not belonging to a



group, and presenting the properties of a second class brightener.

2. Process according to claim 1, characterized in that the organic compound comprises at least a double or triple bond.

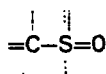
3. Process according to claim 1 or 2, characterized in that the compound is a butyne diol.

4. Process according to claims 1 or 2, characterized in that the compound is an ethylene cyanohydrin.

5. Process according to any one of the preceding claims, characterized in that a cylindrical screen is produced by subjecting a cylindrical screen skeleton having been formed upon a cylindrical matrix in a first electrolytic bath and stripped from the matrix to an electrolysis in the second electrolytic bath.

6. Process according to any one of the preceding claims, characterized in that the screen skeleton is formed upon a matrix being provided with a thin layer of a separating agent, such as beeswax.

7. A screen, obtained by subjecting a screen skeleton, (9) electrolytically formed upon a matrix (1) in a first electrolytic bath and subsequently stripped from said matrix, to an electrolysis in a second electrolytic bath, in the presence of at least one brightener, characterized in that the second electrolytic bath comprised at least one organic compound having at least one unsaturated bond, not belonging to a

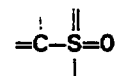


group, and presenting the properties of a second class brightener, the apertures in the finished screen substantially corresponding with the apertures in the starting screen skeleton.

8. A screen, according to claim 7, characterized in that the screen skeleton is a cylindrical screen skeleton.

Revendications

1. Procédé d'obtention d'un écran par voie électrolytique en soumettant une ossature d'écran formée sur une matrice dans un premier bain électrolytique en ensuite démoulée de la matrice, à une électrolyse dans un second bain en présence d'au moins un brillanteur, caractérisé en ce que le second bain électrolytique comprend au moins un composé organique ayant au moins une liaison insaturée, n'appartenant à un groupe



et présentant les propriétés d'un brillanteur de deuxième classe.

2. Procédé selon la revendication 1, caractérisé en ce que le composé organique comprend au moins une double ou une triple liaison.

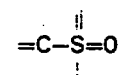
3. Procédé selon la revendication 1 ou 2, caractérisé en ce que le composé est un butyne-diol.

4. Procédé selon la revendications 1 ou 2, caractérisé en ce que le composé est une éthylène cyanhydrine.

5. Procédé selon l'une des revendications précédentes, caractérisé en ce qu'un écran cylindrique est obtenu en soumettant une ossature d'écran cylindrique formée sur une matrice cylindrique dans un premier bain électrolytique et démoulée de la matrice, à une électrolyse dans le second bain électrolytique.

6. Procédé selon l'une des revendications précédentes, caractérisé en ce que l'ossature d'écran est formée sur une matrice munie d'une mince couche d'un agent de séparation tel que de la cire d'abeilles.

7. Un écran obtenu en soumettant une ossature d'écran (9) formée par voie électrolytique sur une matrice (1) dans un premier bain électrolytique et démoulée ensuite de ladite matrice, à une électrolyse dans un second bain électrolytique en présence d'au moins un brillanteur caractérisé en ce que le second bain électrolytique comprend au moins un composé organique ayant au moins une liaison insaturée, n'appartenant pas à un groupe



et présentant les propriétés d'un brillanteur de deuxième classe, les ouvertures dans l'écran fini correspondant sensiblement aux ouvertures dans l'ossature d'écran de départ.

8. Un écran selon la revendication 7, caractérisé en ce que l'ossature d'écran est cylindrique.

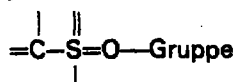


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térisé en ce que l'ossature d'écran est une ossature d'écran cylindrique.

Patentansprüche

1. Verfahren zur elektrolytischen Herstellung eines Gitters, bei dem man ein Gitter-Grundgerüst, das auf einer Matrix in einem ersten elektrolytischen Bad erzeugt und anschließend von der Matrix abgezogen worden ist, einer Elektrolyse in einem zweiten elektrolytischen Bad in Gegenwart mindestens eines Aufhellers unterwirft, dadurch gekennzeichnet, daß das zweite elektrolytische Bad enthält mindestens eine organische Verbindung mit mindestens einer ungesättigten Bindung, die nicht zu einer



gehört und die Eigenschaften eines Aufhellers zweiter Klasse aufweist.

2. Verfahren nach Anspruch 1, dadurch gekennzeichnet, daß die organische Verbindung mindestens eine Doppeloder Dreifachbindung aufweist.

3. Verfahren nach Anspruch 1 oder 2, dadurch gekennzeichnet, daß die Verbindung ein Butindiol ist.

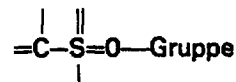
4. Verfahren nach Anspruch 1 oder 2, dadurch gekennzeichnet, daß die Verbindung ein Ethylencyanohydrin ist.

5. Verfahren nach einem der vorhergehenden Ansprüche, dadurch gekennzeichnet, daß

ein zylindrisches Gitter hergestellt wird, indem man ein zylindrisches Gittergrundgerüst, das auf einer zylindrischen Matrix in einem ersten elektrolytischen Bad erzeugt und von der Matrix abgezogen worden ist, einer Elektrolyse in dem zweiten elektrolytischen Bad unterwirft.

6. Verfahren nach einem der vorhergehenden Ansprüche, dadurch gekennzeichnet, daß das Gittergrundgerüst auf einer Matrix erzeugt wird, die mit einer dünnen Schicht eines Trennmittels, wie z.B. Bienenwachs, versehen ist.

7. Gitter, hergestellt, indem man ein Gittergrundgerüst (9), das auf einer Matrix (1) in einem ersten elektrolytischen Bad elektrolytisch erzeugt und anschließend von der Matrix abgezogen worden ist, einer Elektrolyse in einem zweiten elektrolytischen Bad in Gegenwart mindestens eines Aufhellers unterwirft, dadurch gekennzeichnet, daß das zweite elektrolytische Bad enthält mindestens eine organische Verbindung mit mindestens einer ungesättigten Bindung, die nicht zu einer



gehört und die Eigenschaften eines Aufhellers zweiter Klasse aufweist, wobei die Öffnungen in dem fertigen Gitter im wesentlichen den Öffnungen in dem Ausgangs-Gittergrundgerüst entsprechen.

8. Gitter nach Anspruch 7, dadurch gekennzeichnet, daß das Gittergrundgerüst ein zylindrisches Gittergrundgerüst ist.

