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(54) **Process for covering a concrete wall with a plastic layer.**

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(56) References cited :
WO-A-86/06023
BE-A- 767 757
DE-A- 2 227 565
DE-A- 3 422 871
FR-A- 2 018 240
FR-A- 2 233 489

(56) References cited :
GB-A- 1 565 651
GB-A- 2 004 811
GB-A- 2 144 478
NL-A- 6 410 779
US-A- 3 405 493

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Description

The invention relates to a process for covering a surface of a wall or similar concrete structural part of concrete or another stone-type material with a plastic layer in the form of a sheet.

Walls or similar structural parts of concrete or another stone-type building material can run the risk of being attacked by corrosive substances, as a result of which their service life is considerably reduced. This is particularly the case as regards, for example underground pumping stations which are situated between a sewer and a sewage purification plant, and in which the environment contains a relatively high concentration of H_2S, which attacks the concrete structure of the stations, thereby reducing the life of such stations in an unacceptable manner.

There are therefore increasing demands for such concrete structures to be protected against such a corrosive environment.

It is known (e.g. from NL-A-6410779) when building new concrete structures to cover the wood form with a sheet-type layer of a plastic so that, after the concrete poured into the form has set and the form is removed the set concrete has a coating consisting of the plastic sheet.

This process cannot, of course, be used for existing concrete structures.

The object of the invention is to produce a process for covering existing structures of concrete or another stone-type material such as masonry with a plastic layer in the form of a sheet.

This object is achieved with the process according to the invention in that a number of strips spaced apart and running essentially parallel to one another are fixed to the wall by means of anchoring members or similar members in such a way that the surface parts of the strips projecting most from the wall lie in one flat, curved or broken finishing face, a layer of concrete or similar material is then applied to the concrete wall in such a way that the outer surface of this layer essentially coincides with the said finishing face, following which the sheet-type plastic layers are laid against the finishing face and connected to the above-mentioned surface parts of the strips.

If the wall for covering already has parts which have been attacked by a corrosive substance, the attacked surface parts are removed from the wall first of all, before the strips are applied.

It is preferable that at least the above-mentioned surface parts of the strips should be made of a plastic, which means that the sheet-type plastic layers can be connected in an advantageous manner to the above-mentioned surface parts of the strips by heat welding, so that the sheet-type plastic layers can be connected to the strips along the entire length of said strips.

It is, however, also possible to connect the sheet-type plastic layers to the strips by means of screws and then cover the outsides of the screw heads. This is particularly advantageous for covering a wall forming a ceiling, since a relatively rigid and thick plastic sheeting must be used here in order to prevent too great sagging of the sheet parts between the strips.

The strips can be provided with laterally projecting parts by means of which the strips are anchored in the concrete layer which has been applied.

In this case or otherwise, the strips can be essentially trapezoidal in cross section, the largest of the parallel sides facing the concrete wall, so that the strip is a self-anchoring shape.

The invention is explained in greater detail with reference to the example of an embodiment shown in the drawing of a wall structure covered according to the process of the invention.

Fig. 1 shows schematically a wall covered according to the invention ;

Fig. 2 shows on a larger scale a part of the wall shown in Fig. 1 ; and

Fig. 3 shows a cross section through the wall.

As shown in Fig. 1, a surface of a concrete wall is covered with a sheet-type plastic layer by means of a number of strips 2 which run parallel to each other, and which are fixed by means of anchoring members 3 to the wall 1.

As shown in Figs. 2 and 3, corroded parts of the concrete wall 1 are removed at 1′ before the strips 2 are applied, so that a sound concrete surface is obtained there.

The strips 2 each comprise a sectional strip 4 of, for example, galvanized metal filled with a plastic 5, for example rigid PVC, so that a projecting free surface part 5′ is present.

The strips 2 are fixed to the concrete wall 1 by means of ties 6 anchored in holes drilled in the concrete wall 1, the screw rods 7 and the nuts 8 screwed thereon, in such a way that the surface parts 5′ lie in one finishing face.

A layer 9 of filling mortar or pouring concrete is then applied, the external surface thereof coinciding with the above-mentioned finishing face.

Finally, the sheets of plastic 10 are fitted against this finishing face and are fixed by heat welding to the faces 5′ of the plastic inside the sections 4.

The sheets 10 are made of, for example, flexible PVC and are, for example, 1.8-2 mm thick.

For a wall forming a ceiling it is, however, preferable to use covering sheets of rigid PVC about 4 mm thick, in order to prevent too great sagging between the strips.

Claims

1. Process for covering a surface of a wall (1) or similar structural part of concrete or another stone-type material with a plastic layer in the form of a sheet

(10), characterized in that a number of strips (2) spaced apart and running essentially parallel to one another are fixed to the wall by means of anchoring members (3) or similar members in such a way that the surface parts (5') of the strips projecting most from the wall lie in one flat, curved or broken finishing face, a layer (9) of concrete or similar material is then applied to the concrete wall in such a way that the outer surface of this layer essentially coincides with the said finishing face, following which the sheet-type plastic layers are laid against the finishing face and connected to the above-mentioned surface parts of the strips.

2. Process according to Claim 1, in which the wall has parts (1') attacked by a corrosive substance, characterized in that the attacked surface parts are removed from the wall first of all, before the strips are applied.

3. Process according to Claim 1 or 2, characterized in that at least the above-mentioned surface parts of the strips are made of a plastic.

4. Process according to Claim 3, characterized in that the sheet-type plastic layers are connected by heat welding to the above-mentioned surface parts of the strips.

5. Process according to Claims 1-3, characterized in that the sheet-type plastic layers are connected to the strips by means of screws, and the outsides of the screw heads are then covered.

6. Process according to Claims 1-5, characterized in that the strips are provided with laterally projecting parts with which the strips are anchored in the concrete layer applied.

7. Process according to Claims 1-6, characterized in that the strips in cross section are essentially trapezoidal in shape, and the largest of the parallel sides faces the concrete wall.

Revendications

1. Procédé pour recouvrir d'une couche plastique en forme de feuille (10) une surface d'un mur (1) ou d'une pièce structurelle similaire en béton ou autre matériau de type pierre, caractérisé en ce qu'un certain nombre de feuillards (2) espacés les uns des autres et courant essentiellement parallèlement les uns aux autres sont fixés au mur au moyen d'éléments d'ancrage (3) ou d'éléments similaires de manière telle que les parties (5') de la surface des feuillards qui s'étendent en relief le plus loin du mur sont dans une même face de finissage plane, incurvée ou brisée, ensuite une couche (9) de béton ou matériau similaire est appliquée au mur de béton de manière telle que la surface extérieure de cette couche coïncide essentiellement avec ladite face de finissage, sur quoi les couches plastiques de type feuille sont couchées sur la face de finissage et reliées aux parties susmentionnées de la surface des feuillards.

2. Procédé selon la revendication 1, dans lequel le mur comporte des parties (1') attaquées par une substance corrosive, caractérisé en ce que les parties attaquées de la surface sont tout d'abord enlevées du mur avant l'application des feuillards.

3. Procédé selon la revendication 1 ou 2, caractérisé en ce qu'au moins les parties susmentionnées de la surface des feuillards sont faites de plastique.

4. Procédé selon la revendication 3, caractérisé en ce que les couches plastiques de type feuille sont reliées par soudure à chaud aux parties susmentionnées de la surface des feuillards.

5. Procédé selon les revendications 1-3, caractérisé en ce que les couches plastiques de type feuille sont reliées aux feuillards au moyen de boulons et les parties extérieures des têtes des boulons sont ensuite recouvertes.

6. Procédé selon les revendications 1-5, caractérisé en ce que les feuillards sont pourvus de parties qui s'étendent latéralement en relief et avec lesquelles les feuillards sont ancrés dans la couche de béton appliquée.

7. Procédé selon les revendications 1-6, caractérisé en ce que les feuillards sont de forme essentiellement trapézoïdale en section transversale et la plus grande des faces latérales parallèles se trouve vis-à-vis du mur de béton.

Ansprüche

1. Verfahren zum Ueberdecken einer Wandoberfläche (1) oder eines ähnlichen Strukturteils aus Beton oder anderem steinartigem Material mit einer Kunststoffschicht in Form einer Folie (10), dadurch gekennzeichnet, dass eine Anzahl von Bandstücken (2), die voneinander beabstandet sind und im wesentlichen parallel zueinander laufen, mittels Verankerungselementen (3) oder ähnlichen Elementen an der Wand derart befestigt sind, dass die Oberflächenteile (5') der Bandstücke, die am meisten von der Wand weg ragen, in einer gemeinsamen flachen, gekrümmten oder gebrochenen Endbearbeitungsfläche liegen, dann eine Schicht (9) aus Beton oder ähnlichem Material auf die Betonwand derart aufgetragen wird, dass die Aussenfläche dieser Schicht im wesentlichen mit der genannten Endbearbeitungsfläche übereinstimmt, worauf die folienartigen Kunststoffschichten auf die Endbearbeitungsfläche gelegt und mit den obengenannten Oberflächenteilen der Bandstücke verbunden werden.

2. Verfahren nach Anspruch 1, bei welchem die Wand von einer ätzenden Substanz angegriffene Teile (1') aufweist, dadurch gekennzeichnet, dass zunächst die angegriffenen Oberflächenteile von der Wand entfernt werden, bevor die Bandstücke aufgesetzt werden.

3. Verfahren nach Anspruch 1 oder 2, dadurch gekennzeichnet, dass zumindest die obengenannten Oberflächenteile der Bandstücke aus Kunststoff gefertigt werden.

4. Verfahren nach Anspruch 3, dadurch gekennzeichnet, dass die folienartigen Kunststoffschichten durch Wärmeverschweissung mit den obengenannten Oberflächenteilen der Bandstücke verbunden werden.

5. Verfahren nach den Ansprüchen 1-3, dadurch gekennzeichnet, dass die folienartigen Kunststoffschichten mittels Bolzen mit den Bandstücken verbunden und dann die Aussenteile der Bolzenköpfe überdeckt werden.

6. Verfahren nach den Ansprüchen 1-5, dadurch gekennzeichnet, dass die Bandstücke mit seitlich ragenden Teilen versehen sind, mit denen die Bandstücke in die aufgetragene Betonschicht verankert werden.

7. Verfahren nach den Ansprüchen 1-6, dadurch gekennzeichnet, dass die Bandstücke im Querschnitt im wesentlichen trapezförmig sind und die grössere der parallelen Seitenflächen gegenüber der Betonwand liegt.

fig-2

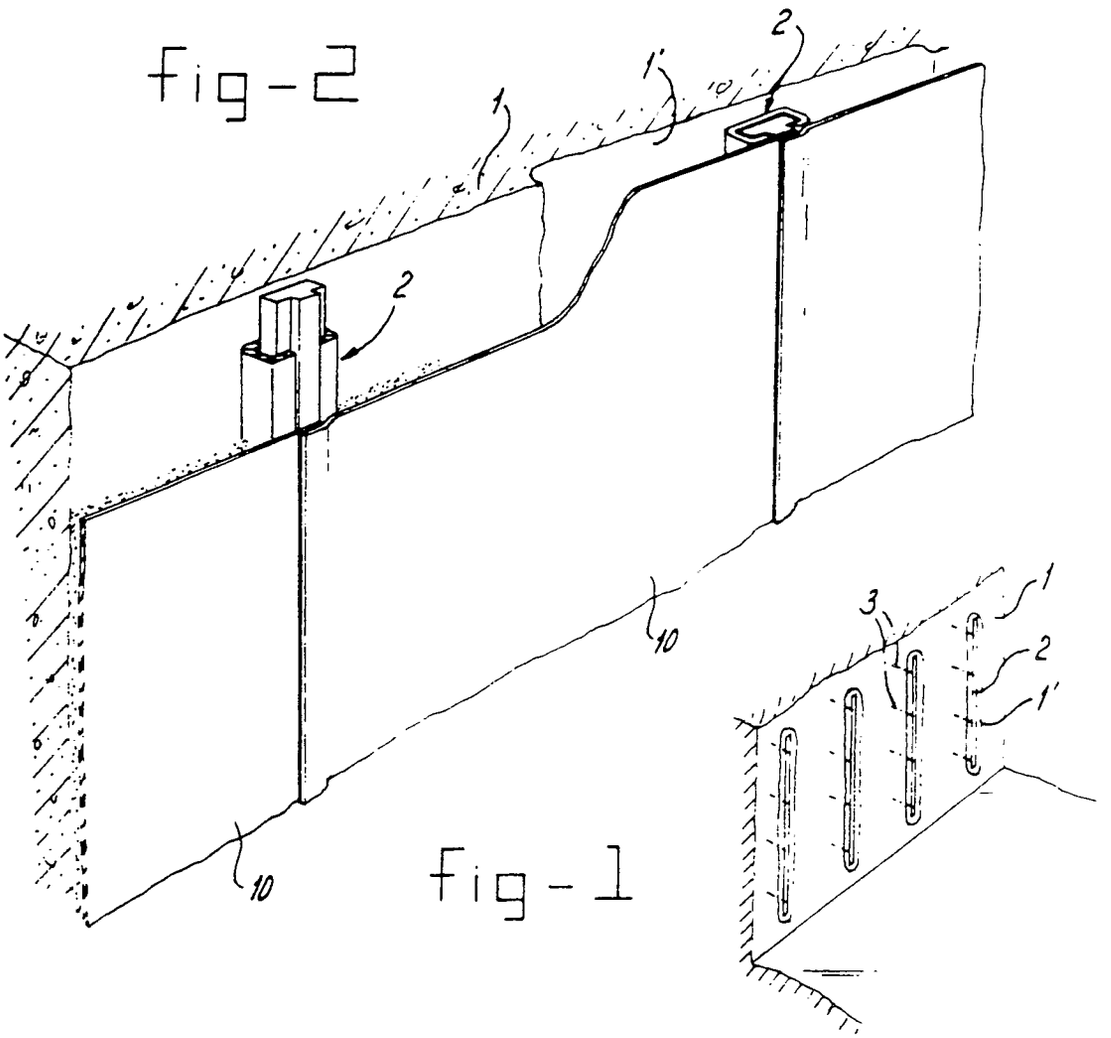

fig-1

fig-3