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(54) **Equipment for manufacturing in situ and laying over a basin bottom and/or bank, a mat.**

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DE-B- 1 016 197
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(73) Proprietor: **Bitumar, naamloze vennootschap**
Scheldedijk, 30
B-2730 Zwijndrecht(BE)

(72) Inventor: **Elskens, Frank**
Ekkergatstraat 2
B-2560 Rumst(BE)

(74) Representative: **Pieraerts, Jacques et al**
Bureau Gevers S.A. rue de Livourne 7 bte 1
B-1050 Bruxelles(BE)

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Description

This invention relates to an equipment for manufacturing "in situ" and laying over the bottom and/or the bank of a basin a mat comprised of mineral asphalt or similar which is laid over a carrier comprised for example of a geotextile or similar industrial product, comprising means for bringing on a carrier these bituminous materials which mainly comprise the mat and an apparatus for holding said mat, pulling same through the water and releasing same remotely.

Processes and arrangements for laying revetments over the bottom and/or the river banks have been described by DE-B-1 016 197.

In this reference there is described an equipment according to the preamble of claim 1 and a method and an apparatus for spreading over the bank of a river a mat covered with sand or grit bound by a bituminous composition.

In the reference cited the mat is pulled either over the river bank or bottom by means of a cable.

The problem of how to separate the cable and the associated fastening device when the mat is not pulled from one bank of the river to the other one has not been approached nor suggested by the above patent.

An essential object of this invention is an equipment for manufacturing "in situ" a geotextile mat covered with a mineral asphalt composition allowing the apparatus for pulling the geotextile mat to be released remotely when same spread over the bottom of the river, as said in the preamble, does not extend from one bank to the other.

To make this possible according to the present invention said apparatus for pulling through the water, said geotextile with the bituminous materials dumped thereon, is comprised of a spiked roller which can enter the geotextile and remains locked relative to a frame, while means are provided to unlock remotely said spiked roller relative to said frame to enable releasing said geotextile from the spiked roller when the mat has been pulled to the required location.

According to preferred embodiments of the invention, said spiked roller is provided with at least one pawl and a ratchet-wheel mechanism for retaining said spiked roller locked relative to said frame and said apparatus for pulling through the water said carrier with the viscous materials dumped thereon, is comprised of a clamping device wherein one end from said carrier may be gripped, and means to remotely-control said clamping device.

Other details and advantages of the invention will stand out from the following description of an equipment for manufacturing in situ and laying over a basin bottom, a mat comprised of mineral asphalt

or similar and a carrier from geotextile, for example, or a similar product, according to the invention. This description is only given by way of non limitative example, and with reference to the accompanying drawings, in which:

Figure 1 is a diagrammatic view showing the equipment according to the invention, in a first step of laying a mat over the bank and the bottom of a river.

Figure 2 is a diagrammatic view showing of the equipment according to the invention, in a second step of laying the same mat.

Figure 3 shows on a larger scale, a detail of the equipment according to the invention.

In figures 1 and 2, the basin is shown in 1 and the bottom thereof in 2. The bank is here in the shape of a slope or talus 3. The bank profile as shown in figures 1 and 2 is in no way limitative for the method according to the invention. Any other shape for the bank or the bottom might indeed be considered. It is however clear that the method according to the invention can be worked here under the best conditions.

Before describing the method in detail, it should be made clear that the mats which are being used here are made from geotextiles or diaphragms which are intended to serve as foundation or reinforcement for the mineral asphalt. The geotextile strip 4 is present here preferably in the form of a roll 5 which is mounted on a stand 6 which can be located along the basin. The displacement of the stand may occur on rails, but said stand may also form part of a device which is movable on wheels or caterpillar tracks.

A spreading machine 7 is also part of the stand.

The wording "spreading machine" means that unit which may comprise a mixing device for preparing the mineral asphalt and a metering or proper spreading device. The spreading machine 7 preferably belongs to the stand 6 the roll 5 is also part of. Said spreading machine may possibly also be comprised of a hydraulic crane.

The mineral asphalt laid continuously or discontinuously by the spreading machine 7 over the geotextile strip 4 is visible in figures 1 and 2, and bears reference numeral 8.

The geotextile strip whereon no mineral asphalt is dumped in this location, is locked with the free end thereof by a spiked roller 9 relative to a frame 10. Said geotextile end is wound once or twice at the most about the spiked roller 9. Said spiked roller is mounted in a frame 10. On the spiked roller shaft 12, there is secured a ratchet wheel 13 wherein a pawl 14 with pivot 15 grips. The pawl 14 may be retained pressed in the teeth from ratchet wheel 13, under its own weight or under the action of a spring 16. By pulling on a rope 18 in the

direction of arrow 17, the pawl is pulled out of the ratchet wheel and the spiked roller 9 is free to revolve about the shaft 12 thereof when the frame 10 is pulled further in the direction of arrow 19.

The rope 18 may be pulled upwards from a pontoon 20, but this might also occur in some other way, depending on the local conditions.

When a mat comprised of a geotextile 4 with a mineral asphalt layer 8 dumped thereon is brought in place, the equipment comprised of the spreading machine 7 and accessories thereof, is moved side-wise over the required distance, that is cross-wise to the direction the mat is pulled along, and the same operations may be repeated.

There will appear quite clearly from the above description of the equipment according to the invention, the large advantages which the invention offers, not only for spreading mats regularly over the bottom, but also when considering the time and working hours which are normally taken into account.

Claims

1. Equipment for manufacturing "in situ" and laying over the bottom (2) and/or the bank (3) of a basin (1) a mat comprised of mineral asphalt (8) or similar which is laid over a carrier comprised for example of a geotextile (4) or similar industrial product, comprising means (7) for bringing on a carrier these bituminous materials (8) which mainly comprise the mat and an apparatus (9, 10) for holding said mat, pulling same through the water and releasing same remotely, characterized in that said apparatus (9, 10) for pulling through the water, said geotextile (4) with the bituminous materials (8) dumped thereon, is comprised of a spiked roller (9) which can enter the geotextile (4) and remains locked relative to a frame (10), while means are provided to unlock remotely said spiked roller (9) relative to said frame (10) to enable releasing said geotextile (4) from the spiked roller (9), when the mat has been pulled to the required location.
2. Equipment as defined in claim 1, characterized in that said spiked roller (9) is provided with at least one pawl (14) and a ratchet-wheel mechanism (13) for retaining said spiked roller (9) locked relative to said frame (10).
3. Equipment as defined in claim 1, characterized in that said apparatus for pulling through the water said carrier (4) with the bituminous materials (8) dumped thereon, is comprised of a clamping device wherein one end from said carrier (4) may be gripped, and means to

remotely-control said clamping device.

Revendications

1. Equipement pour fabriquer sur place et déposer sur le fond (2) ou la rive (3) d'un bassin (1) un matelas composé d'un asphalte minéral (8) ou similaire qui est déposé sur un support constitué par exemple, d'un géotextile (4) ou un produit industriel, similaire comprenant des moyens (7) pour déposer sur un support ces matériaux bitumineux (8) qui comporte essentiellement le matelas et un appareil (9, 10) pour retenir ledit matelas, tirer celui-ci au travers de l'eau et le relacher à distance, caractérisé en ce que ledit appareil (9, 10) destiné à tirer ledit géotextile (4) avec les matériaux bitumineux déposés sur celui-ci, est constitué d'un rouleau à pointes (9) qui peut pénétrer dans le géotextile (4) et demeure verrouillé par rapport à un châssis (10), des moyens étant prévus pour déverrouiller à distance ledit rouleau à pointes (9) par rapport audit châssis (10) afin de libérer ledit géotextile (4) du rouleau à pointes (9) lorsque le matelas a été tiré jusqu'à l'endroit désiré.
2. Equipement tel que défini par la revendication 1, caractérisé en ce que ledit rouleau à pointes (9) est pourvu d'au moins un cliquet (14) et d'un mécanisme à roue à rochet (13) destiné à maintenir verrouillé ledit rouleau à pointes (9) par rapport audit châssis (10).
3. Equipement tel que défini par la revendication 1, caractérisé en ce que ledit appareil destiné à tirer ledit support et les matériaux bitumineux (8) disposés dessus est constitué d'un dispositif à cliquet dans lequel une extrémité dudit support (4) peut être agrippée et de moyens pour commander à distance ledit dispositif à cliquet.

Patentansprüche

1. Einrichtung zur Herstellung an Ort und Stelle sowie zum Verlegen über dem Boden (2) und/oder der Böschung (3) eines Beckens (1) einer Matte, die aus über einen aus beispielsweise einer Geotextilware (4) oder einem gleichartigen industriellen Produkt bestehenden Träger angeordnetem mineralischen Asphalt (8) oder Ähnlichem besteht, welche Mittel (7), um auf einen Träger diese bituminösen Materialien (8), welche hauptsächlich die Matte einschließen, aufzubringen, und eine Vorrichtung (9, 10) zum Halten der genannten Matte, Ziehen dieser durch das Wasser und

Freigeben dieser von Ferne umfaßt, dadurch gekennzeichnet, daß die besagte Vorrichtung (9, 10) zum Ziehen der genannten Geotextilware (4) mit den darauf geschütteten bituminösen Materialien (8) durch das Wasser aus einer Stachelwalze (9), die in die Geotextilware (4) eindringen kann und mit Bezug zu einem Gestell (10) verriegelt bleibt, besteht, wobei Mittel vorgesehen sind, um von Ferne die besagte Stachelwalze (9) bezüglich des genannten Gestells (10) zu entriegeln, um ein Freigeben der erwähnten Geotextilware (4) von der Stachelwalze (9), wenn die Matte zu dem gewünschten Platz gezogen worden ist, zu ermöglichen.

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2. Einrichtung nach Anspruch 1, dadurch gekennzeichnet, daß die besagte Stachelwalze (9) mit wenigstens einer Klinke (14) sowie einem Klinkenradmechanismus (13) ausgestattet ist, um die besagte Stachelwalze (9) mit Bezug zu dem genannten Gestell (10) verriegelt zu halten.

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3. Einrichtung nach Anspruch 1, dadurch gekennzeichnet, daß die erwähnte Vorrichtung zum Ziehen des genannten Trägers (4) mit den darauf geschütteten bituminösen Materialien (8) aus einer Klemmvorrichtung, in welcher ein Ende von dem genannten Träger (4) eingespannt werden kann, und Mitteln, um die besagte Klemmvorrichtung fernzusteuern, besteht.

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