Industria y Comercio

SUPERINTENDENCIA

SOLICITUD
PATENTE DE INVENCIÓN
PCT

EXPEDIENTE N° 04-77531

TITULO BLOQUE Y ESTERILLA DE REVESTIMIENTO

CLASIFICACION INTERNACIONAL E02B 3/14

SOLICITANTE LEE MASONRY PRODUCTS, LLC

DOMICILIO KENTUCKY, ESTADOS UNIDOS DE AMERICA

APODERADO DARIO CARDENAS NAVAS

BOGOTÁ, D C _____

PETITORIO

Industria y Comercio
SUPERINTENDENCIA

SUPERINDUSTRIA Y COMERCIO
Radicacion : 04077531 00000000 Folios: 138
Fecha (AMD): 2004-08-18 12:08:04
Tramite : 011 PCT-PATENT 370 FASE NACI 411 PRESENTA
Dependencia: 0020 DIVISION DE NUEVAS CREACIONES

FORMULARIO UNICO DE SOLICITUD DE PATENTE
PCT
ENTRADA EN FASE NACIONAL

① SOLICITUD DE:

[X] Patente de Invención [ ] Patente de Modelo de Utilidad

[X] Capítulo I [ ] Capítulo II

② SOLICITANTE (71)

Nombre: **LEE MASONRY PRODUCTS, LLC**

Dirección: 309 Dishman Lane, Bowling Green, Kentucky 42101, Estados Unidos de América

Nacionalidad o Domicilio: KENTUCKY, ESTADOS UNIDOS DE AMERICA

Lugar de Constitución: ESTADOS UNIDOS DE AMERICA

Teléfono: 3123600 Fax: 3122410

E-mail: general@cardenasycardenaas.com

IDENTIFICACION

C.C. [ ] NIT [ ]

C.E. [ ] Otro [ ]

Cual _____

Número _____

③ REPRESENTANTE O APODERADO

Nombre: **DARIO CARDENAS NAVAS**

Dirección: Carrera 7 No 71-52 Torre B Piso 9

Teléfono: 3123600 Fax: 3122410

E-Mail: general@cardenasycardenas.com

IDENTIFICACION

C.C. [X] NIT [ ]

C.E. [ ] Otro [ ]

Cual _____

No 17.066.629 TP 1.250

④ INVENTOR(ES) (72)

Nombre:
1. Kenneth L. Mcallister
2. Kenny W. Mccoy
3. Derek W. Dice

Dirección:
1. 600 Covington Grove Boulevard,Bowling Green, Kentucky 42101, Estados Unidos de América
2. 4436 Sandy Creek Road, Morgantown. Kentucky 42261, Estados Unidos de América
3. 1712-B Rockingham Avenue Bowling Green, Kentucky 42104, Estados Unidos de América

Nacionalidad o Domicilio:
1. KENTUCKY, ESTADOS UNIDOS DE AMERICA
2. KENTUCKY, ESTADOS UNIDOS DE AMERICA
3. KENTUCKY, ESTADOS UNIDOS DE AMERICA

⑤ PCT (86)

Solicitud Internacional No. PCT/US03/00776 Fecha Enero 10, 2003

Publicación Internacional No. WO 03/060240 A2 Fecha Julio 24, 2003

⑥ Título(54):

BLOQUE Y ESTERILLA DE REVESTIMIENTO

⑦ Clasificación Internacional (51): E02B 3/14

⑧ Prioridad	(33)País de Origen	(32)Fecha	(31)N° de Solicitud
Si [X] NO [ ]	U.S.A	Enero 10, 2002	10/044,326

⑨ Comprobante de Pago No.: _____ **Fecha** _____

AMP/IA/Gloria

ANEXOS

- [X] Comprobante de pago de la tasa de presentación de la solicitud.
- [ ] Documento que acredita la existencia y representación legal cuando el solicitante sea persona jurídica.
- [ ] Poderes, si fuere el caso.
- [ ] Documento de cesión del inventor al solicitante o a su causante.
- [ ] Declaraciones
- [X] Copia de la solicitud internacional. (Resumen, descripción, reivindicaciones, dibujos)
- [X] Traducción de la solicitud internacional al castellano. (Resumen, descripción, reivindicaciones, dibujos)
- [ ] Copia del examen preliminar internacional efectuado por la Autoridad Internacional de Examen Preliminar (IPEA).
- [ ] Traducción del examen preliminar internacional efectuado por la IPEA.
- [ ] De ser el caso, copia del contrato de acceso.
- [ ] De ser el caso, documento que acredite la licencia o autorización de uso de conocimientos tradicionales de las comunidades indígenas.
- [ ] De ser el caso, certificado de depósito del material biológico.
- [X] Arte final 12x12.
- [ ] De ser el caso, información sobre otras solicitudes de patente o títulos obtenidos en el extranjero por el mismo titular o su causante, relacionadas parcial o totalmente con la invención de esta solicitud.
- [ ] De ser el caso, modificaciones efectuadas a la solicitud internacional.
- [ ] Otros.

11 FIGURA CARACTERISTICA

12 Solicito la Concesión de la patente.

NOMBRE: DARIO CARDENAS NAVAS

FIRMA:

C.C. 17.066.629 BTA TP. 1.250 C.S.J.

3

NIT : 9001760

SUPERINDUSTRIA Y COMERCIO

Radicacion : 04077531 00000000 Folios: 130

Fecha (AMD): 2004-08-18 12:08:04

Tramite : 811 PCT-PATENT 370 FASE NACI 411 PRESENTA

Dependencia: 2020 DIVISION DE NUEVAS CREACIONES

RECIBO OFICIAL DE CAJA : 04 - 63,031

FECHA : AGOSTO 9 DE 2004

***** C O N S I G N A C I O N *****

DEPOSITANTE	TIPO PAGO	BANCO	CUENTA	No. PAGO	FECHA PGO	Vr. PAGO
CARDENAS Y CARDENAS P.I.	CONSIGNACION	BANCO POPULAR	050-00110-6	23556872	09/08/2004	3,394,000.00

***** C O N C E P T O *****

CANT.	RENTISTICO	CONCEPTO	TOTAL CONCEPTO
1	50005-01-01 SOLICITUDES	1 TRAMITES DE SOL. DE PATENTE DE IN	422,000.00
		TOTAL : $	422,000.00

SON: CUATROCIENTOS VEINTIDOS MIL PESOS

RESPONSABLE : _____ CARDENAS & CARDENAS

RECIBO DE CAJA APLICADO AL EXPEDIENTE No. BLOQUE Y ESTERILLA DE.. REVESTIMIENTO

B

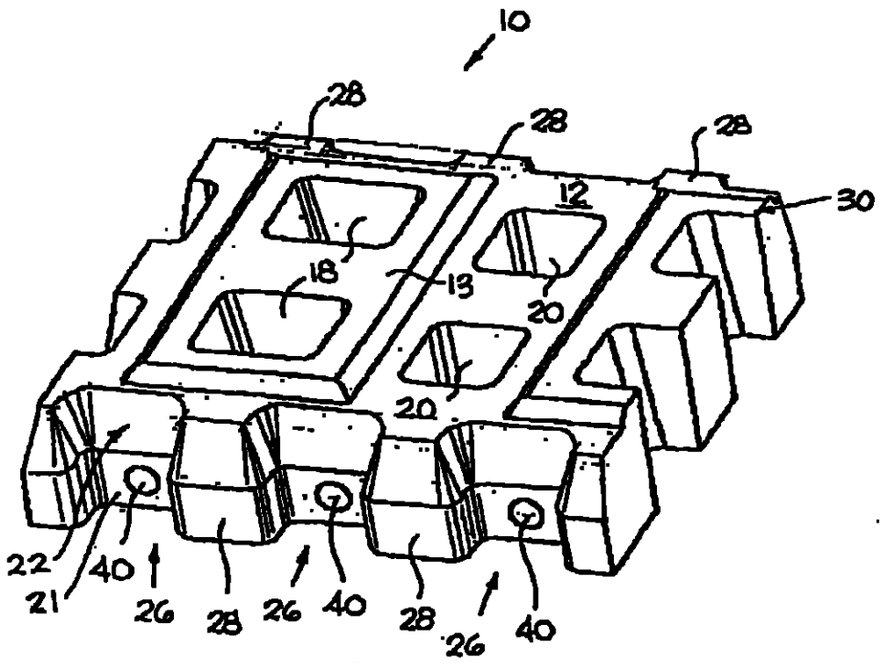

FIG. 1

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PCT

NOTA QUE INFORMA AL SOLICITANTE DE LA COMUNICACIÓN DE LA SOLICITUD INTERNACIONAL A LAS OFICINAS DESIGNADAS

(PCT Regla 47.1(c), primera sentencia)

De la OFICINA INTERNACIONAL

A: **SALAZAR, John, R.**
Middleton Reutlinger
2500 Brown & Williamson Tower
Louisville, KY 40202
ETATS-UNIS D'AMERIQUE

Fecha de Correspondencia ***(día/mes/año)***

24 Julio 2003 (24.07.03)

Referencia de archivo del agente o solicitante

ARMORFLEX

AVISO IMPORTANTE

Solicitud Internacional No.

PCT/US03/00776

f

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Fecha de Presentación Internacional *(día/mes/año)*

10 Enero 2003 (10.01.03)

Fecha de Prioridad *(día/mes/año)*

10 Enero 2002 (10.01.02)

Solicitante

LEE MASONRY PRODUCTS, LLC

1. Por medio del presente aviso ya que la Oficina Internacional **ha comunicado** , como lo establece el Artículo 20, la solicitud internacional a las siguientes Oficinas designadas en la fecha indicada anteriormente como la fecha de correspondencia de esta nota:

CH, EP, KP, KR, US

De acuerdo con la Regla 47.1(c) tercera sentencia, aquellas Oficinas aceptarán el presente aviso c omo evidencia concluyente de que la comunicación de la solicitud internacional ha tenido lugar debidamente en la fecha de correspondencia indicada anteriormente y no se requiere ninguna copia de la solicitud internacional para

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ser suministrada por el solicitante a la(s) Oficina(s) designada(s).

2. Las siguientes Oficinas designadas han desistido de los requerimientos para tal comunicación en esta fecha:

AE, AG, AL, AM, AP, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EA, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OA, OM, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW

La comunicación será hecha a aquellas Oficinas solo sobre sus requerimientos. Adicionalmente, aquellas Oficinas no requieren que el solicitante presente una copia de la solicitud internacional (Regla 49.1(a-*bis*)).

3. Se incluye con este aviso una copia de la solicitud internacional como se publicó por la Oficina Internacional en Julio 24 de 2003 (24.07.03) de acuerdo con No. 03/060240.

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4. LÍMITES DE TIEMPO para presentar una petición para examen preliminar internacional y para entrar en fase nacional.

El límite de tiempo aplicable para entrar a la fase nacional, **sujeto a lo que se dice en el siguiente párrafo, es 30 MESES** a partir de la fecha de prioridad , no solo con respecto a cualquier Oficina elegida si una petición para examen preliminar internacional se presenta antes de la expiración de **19 meses** a partir de la fecha de prioridad, pero también con respecto a cualquier Oficina designada, en ausencia de la presentación de tal petición, donde el Artículo 22(1) como se modificó con efecto desde Abril 1 2002 aplica con respecto a tal Oficina Designada. Para detalles adicionales, ver *Gaceta PCT* No. 44/2001 de 1 Noviembre 2001, páginas 19926, 19932 y 19934, así como también las publicaciones del *Boletín PCT*, Octubre y Noviembre 2001 y Febrero 2002.

En la práctica, **los límites de tiempo no son otros que los 30 meses de límite de tiempo** que continuarán para aplicar, para varios periodos de tiempo, con respecto a ciertas Oficinas designadas o elegidas. Para **actualizaciones regulares sobre los límites de tiempo**

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9.

aplicables (20, 21, 30 o 31 meses, u otro límite de tiempo), Oficina por Oficina, refiérase a la *Gaceta PCT* el *Boletín PCT* y la *Guía del Solicitante PCT*, Volumen II, Capítulos Nacionales, todos disponibles en el sitio de Internet de la WIPO, en http://www.wipo.int/pct/en/index.html.

Para presentar una petición para **examen preliminar internacional**, ver la *Guía del Solicitante PCT* , volumen I/A, Capítulo IX. Solo un solicitante quien es un nacional o residente de un Estado Contratante del PCT que esté unido mediante el Capítulo II tiene el derecho a registrar una petición para examen preliminar internacional (en la actualidad, todos los Estados Contratantes del PCT están unidos mediante el Capítulo II).

Es **responsabilidad única** del solicitante monitorear todos estos límites de tiempo.

The Internacional Bureau of WIPO
34, chemin des Colombettes
1211 Geneva 20, Switzerland

Oficial Autorizado Judith Zahra

10

10.

(12) SOLICITUD INTERNACIONAL PUBLICADA DE ACUERDO CON EL TRATADO DE COOPERACIÓN DE PATENTES (PCT)

(19) Organización Mundial De Propiedad Intelectual

Oficina Internacional

(43) Fecha de Publicación Internacional

24 Julio 2003 (24.07.03)

PCT

(10) Número de Solicitud Internacional

WO 03/060240 A2

(51) Clasificación de Patente Internacional[7]:

E02B

(21) Número de Solicitud Internacional:

PCT/US03/00776

1/

(22) Fecha de Presentación Internacional:

10 de Enero 2003 (10.01.2003)

(25) Idioma de presentación: Inglés

(26) Idioma de publicación: Inglés

(30) Datos de la Prioridad:

10/044,326 10 de Enero 2002 (10.01.2002) US

(71) Solicitante (*para todos los Estados designados excepto US*): **LEE MASONRY PRODUCTS, LLC** [US/US]; 309 Dishman Lane, Bowling Green, KY 42101 (US)

(72) Inventores; y

(75) Inventores/solicitantes : *(solo para EUA):* **MCALLISTER, Kenneth, L.** [US/US]; 309 Dishman Lane, Bowling Green, KY 42101 (US). **DICE, Derek, W.** [US/US]; 1712-B Rockingham Avenue, Bowling Green, KY 42014 (US). **MCCOY, Kenny, W.** [US/US]; 4438 Sandy Creek Road, Morgantown, KY 42261 (US).

(74) Agentes: SALAZAR, John , R. et al.; Middleton Reutlinger, 2500 Brown & Williamson Tower, Louisville, KY 40202 (US).

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(81) Estados Designados (*nacional*): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Estados Designad os (*regional*): patente ARIPO (GH, GM, KE, LS, MW, MZ, SD, SL, S Z, TZ, UG, ZM, ZW), patente Eurasiática (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), patente Europea (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, SI, SK, TR), patente OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Declaraciones de acuerdo con la Regla 4.17:
- en cuanto al derecho del solicitante para aplicar para y otorgársele una patente (Regla 4.17(ii)) para las siguientes designaciones AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, TJ, TM, TN, TR,

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TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW, patente ARIPO (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), patente Eurasiática (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), patente Europea (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, SE, SI, SK, TR), patente OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

- *En cuanto al derecho del solicitante a revindicar la prioridad de la solicitud anterior (Regla 4.17(iii)) para todas las designaciones*
- *Del inventor (Regla 4.17 (iv)) solo para US*

Publicado:

- *Sin reporte de búsqueda internacional y a ser republicado en el momento de recibo de tal reporte*

Para códigos de dos letras y otras abreviaturas, referirse a la "guía de notas sobre códigos y abreviaturas" que aparecen al comienzo de cada publicación regular de la Gaceta PCT.

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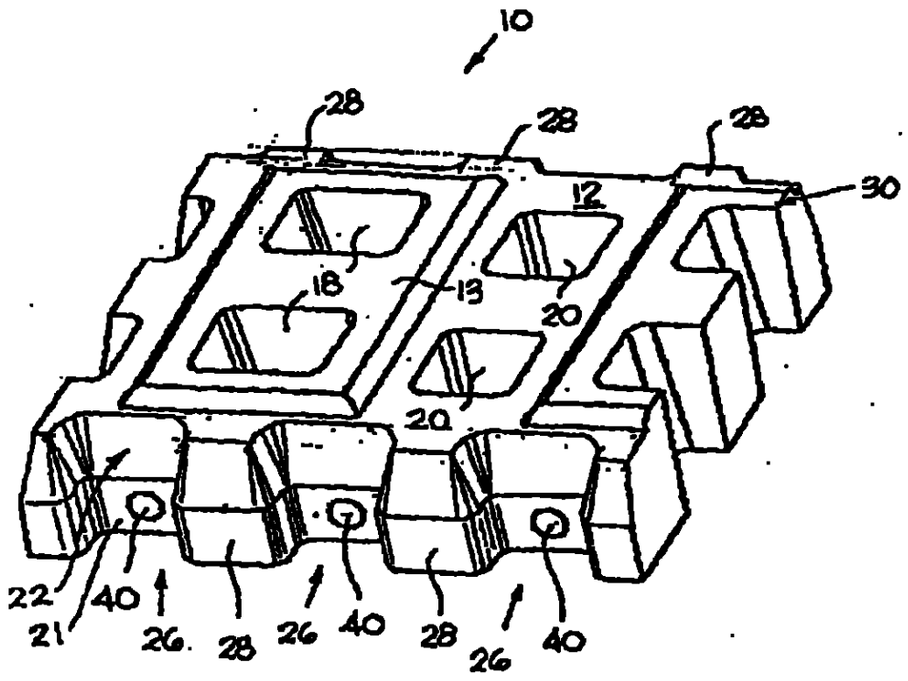
(54) **Título:** BLOQUE Y ESTERILLA DE REVESTIMIENTO



(57) **Resumen:** Una esterilla de revestimiento formada de bloques de revestimiento que tienen un tamaño aproximado de una y media veces más grande que los bloques de tamaño estándar y hechos de concreto premoldeado. Los bloques de revestimiento y los bloques de revestimiento medios son usados como bloques de extremo en hilera s alternadas. El extremo de bloque tiene preferiblemente cuatro paredes laterales que tienen una pluralidad de proyecciones y nichos para interasegurar con bloques de revestimiento adyacentes. Cuando se usa para formar una esterilla de revestimiento, la es terilla tiene bordes alineados en forma regular y resiste el movimiento de hacia arriba y el giro asociado con los bloques medios de la técnica anterior.

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TRATADO DE COOPERACIÓN DE PATENTES

PCT

REPORTE DE BÚSQUEDA INTERNACIONAL

(Artículo 18 y Reglas 43 y 44 PCT)

Archivo de referencia del agente o solicitante

ARMORFLEX

PARA ACCIÓN ADICIONAL

Ver Notificación de Remisión de Reporte de Búsqueda Internacional (de PCT/ISA/220) así como también, donde aplique, ítem 5 adelante.

Solicitud Internacional No.

PCT/US03/00776

Fecha de presentación internacional *(día/mes/año)*

10 Enero 2003 (10.01.2003)

Fecha de prioridad (anterior) *(día/mes/año)*

10 Enero 2002 (10.01.2002)

Solicitante

LEE MASONRY PRODUCTS, LLC

Este reporte de búsqueda internacional ha sido preparado por esta Autoridad de Búsqueda Internacional y es remitida al solicitante de acuerdo con el

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Artículo 18. Una copia está siendo remitida a la Oficina Internacional.

Este reporte de búsqueda internacional consiste de un total de 4 hojas incluyendo esta portada.

☒ Éste también está acompañado por una copia de cada documento de la técnica anterior citado en este reporte.

1. Bases del Reporte

a. Con respecto al **idioma**, la búsqueda internacional se llevó a cabo sobre la base de la solicitud internacional en el idioma en que fue presentada, a menos que se indique otra cosa de acuerdo con este ítem.

☐ la búsqueda internacional fue llevada a cabo sobre la base de una traducción de la solicitud internacional presentada esta Autoridad (Regla 23.1(b)).

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b. Con respecto a cualqui er **secuencia de ácido amino y/o nucleótido** descrito en la solicitud internacional, el examen preliminar internacional se llevó a cabo sobre la base de la lista de secuencias:

- ☐ Contenida en la solicitud internacional en forma escrita
- ☐ Presentada junto con la solicitud internacional en forma legible por computador
- ☐ Suministrada posteriormente a esta autoridad en forma escrita
- ☐ Suministrada posteriormente a esta autoridad en forma legible por computador
- ☐ Se ha suministrado l a declaración de que el listado de secu encias escrito suministrado posteriormente no va más allá de la descripción en la solicitud internacional como se presentó.
- ☐ Se ha suministrado l a declaración de que la información registrada en forma legible por computador es idéntica a l listado de secuenc ias escrito.

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2. ☐ **Ciertas reivindicaciones se encontraron no buscables** (Ver Casilla I).

3. ☐ **Falta unidad de invención** (Ver Casilla II).

4. Con respecto al **título**,

☒ El texto se aprobó como presentado por el solicitante.

☐ Se ha oficializado el texto por esta a utoridad como sigue:

5. Con respecto al **resumen**,

☐ El texto se aprobó como presentado por el solicitante.

☒ Se ha oficializado el texto, de acuerdo con la Regla 38.2(b), por esta Autoridad como parece este en la Casilla III. El solicitante puede, dentro de u n mes a partir de la fecha de correspondencia del reporte de búsqueda internacional, presentar comentarios a esta Autoridad.

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6. La figura de los dibujos a ser publicada con el resumen es la figura No. 1

☒ como lo sugiere el solicitante.

☐ porque el solicitante falló al sugerir una figura.

☐ porque esta figura caracteriza mejora la invención.

☐ Ninguna de las figuras.

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REPORTE DE BÚSQUEDA INTERNACIONAL

Solicitud Internacional No.

PCT/US03/00776

Casilla III TEXTO DEL RESUMEN (Continuación del Ítem 5 de la primera hoja)

Las características técnicas mencionadas en el resumen no incluyen un signo de referencia entre paréntesis (Regla 8.1(d) PCT).

NUEVO RESUMEN

Una esterilla de revestimiento (100) formada de bloques de revestimiento que tienen un tamaño aproximado de una y media veces más grande (10, 100) que los bloques de tamaño estándar (104) y hechos de concreto premoldeado. Los bloques de revestimiento y los bloques de revestimiento medios (10, 110) son usados como bloques de extremo en hileras alternadas. El extremo de bloque tiene preferiblemente cuatro paredes laterales que tienen una pluralidad de proyecciones (28) y nichos (26) para interasegurar con bloques de revestimiento adyacentes. Cuando s e usa para formar una esterilla de

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revestimiento(100), la esterilla tiene bordes alineados en forma regular y resiste el movimiento de hacia arriba y el giro asociado con los bloques medios de la técnica anterior.

REPORTE DE BÚSQUEDA INTERNACIONAL

Solicitud Internacional No.

PCT/US03/00776

A. CLASIFICACIÓN DE LA MATERIA OBJETO

IPC(7) : **E02B 3/14**

US CL : **405/16, 18, 33; 52/590.2, 592.1, 603, 604, 606; 404/38, 40, 41**

De acuerdo con la Clasificación de Patentes Internacional (IPC) o a ambos, clasificación nacional e IPC

B. CAMPOS BUSCADOS

Documentación mínima buscada (sistema de clasificación seguido por símbolos de clasificación)

U.S.: Por favor ver hoja a continuación

La docu mentación mínima buscada no es otra que la documentación mínima para que el alcance de tales documentos se incluya en los campos buscados

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Base de datos electrónica consultada durante la búsqueda internacional (nombre de la base de datos y, donde se practique, los términos de búsqueda utilizados)

C. DOCUMENTOS CONSIDERADOS A SER IMPORTANTES

Categoría *	Citación del documento, indicación, donde es apropiado, de los trámites importantes	*Importancia de la reivindicación No.*
X	US 4,370,075 A (SCALES) 25 enero 1983 (25.01.1983), col. 4, líneas 23 -68; col. 5, línea 1 -67; col. 6, línea 1 - 56.	1 y 3-7
A	US 6.050,044 A (McINTOSH) 18 Abril 2000 (18.04.2000), el documento completo.	8
A	US 4,182,089 A (COOK) 08 Enero 1980 (08.01.1980), el documento completo)	1
A	US 6,408,607 A (SMITH et al) 21 enero 2003 (21.01.2003), el documento completo	1-8

☐ documentos adicionales se listan en la continuación de la Casilla C.

☐ ver las familias de patentes en el anexo.

*Categorías especiales de documentos citados:

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"A" Documentos que definen el estado general de la técnica que no se considera de particular importancia

"E" Documentos anticipados pero publicados o después de la fecha de presentación internacional

"L" Documentos que pueden arrojar dudas sobre la prioridad de la(s) reivindicación(es) o que se citen para establecer la fecha de publicación de otra citación u otra razón especial (como se especifique)

"O" Documento que se refiere a una descripción oral, uso, exhibición u otros medios

"P" Documento publicado antes de la fecha de presentación internacional pero después que la fecha de prioridad reivindicada

"T" Documento posterior publicado después de la fecha de presentación internacional o fecha de prioridad y no en conflicto con la solicitud pero citado para ente nder el principio o teoría resaltada en la invención

"X" Documento de particular importancia; la invención reivindicada no puede ser considerada novedosa o no puede ser considerada que implica un nivel inventivo cuando los documentos se toman solos

"Y" Doc umento de particular importancia; la invención reivindicada no puede ser considerada que implica un nivel inventivo cuando el documento se combina con uno u

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otros más de tales documentos, tales como combinación que son obvias para un experto en la técnica

"&" Documento miembro de la misma familia de patente

Fecha real de terminación de la búsqueda internacional

19 de Abril de 2003 (19.04.2003)

Fecha de correspondencia del reporte de búsqueda internacional

(aparece sello:
27 FEBRERO 2004

Nombre y dirección de correspondencia del ISA/US

Commissioner of Patents and Trademarks
Box PCT
Washington, D.C. 20231
Facsímil No. (703)305-3230

Oficial autorizado

(Aparece firma ilegible)

John E. Breene

Teléfono No. (703) 308-6777

Formulario PCT/ISA/210 (Segunda hoja) (Julio 1998)

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REPORTE DE BÚSQUEDA INTERNACIONAL

PCT/US03/00776

Continuación de B. CAMPOS BUSCADOS Ítem 1:

405/ 15, 16, 17, 18, 21, 22, 33; 52/590.2, 592.1, 596, 603, 604, 606, 608, 609; 404/34, 37, 38, 39, 40, 41; D52/112, 113, 114, 115, 116, 118; D21/484, 489, 491, 492, 500, 501, 503, 504, 505

Formulario PCT/ISA/210 (segunda hoja) (Julio 1998)

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NOTAS AL FORMULARIO PCT/ISA/220

Estas Notas tienen el propósito de dar instrucciones relacionadas con la presentación de correcciones de acuerdo con el Art ículo 19. Las Notas se basan en los requerimientos del Tratado de Cooperación de Patentes, las Regulaciones y las Instrucciones Administrativas de acuerdo con ese Tratado. En c aso de discrepancia entre estas Notas y aquellos requerimientos, se aplican los últimos. Para información mas detallada ver también la *Guía del solicitante PCT*, una publicación WIPO.

En estas Notas, "Artículo", "Regla" y "Sección" se refiere a las condiciones del PCT, las Regulaciones del PCT y las Instrucciones Administrativas, respectivamente.

INSTRUCCIONES RELACIONADAS CON LAS CORRECCIONES DE ACUERDO CON EL ARTÍCULO 19

El solicitante tiene , después de haber recibido el reporte de búsqueda internacional, una oportunidad para corregir las reivindicaciones de la solicitud internacional. Sin embargo se debe hacer énfasis en que,

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ya que todas las partes de la solicitud internacional (reivindicaciones, descripción y dibujos) pueden ser corregidas durante el procedimiento de examen preliminar internacional, usualmente no hay necesidad de registrar correcciones de las reivindicaciones de acuerdo con el Artículo 19 excepto en donde, por ejemplo el solicitante desea ésta para ser publicada para propósito de protección provisional o tiene otra razón para corregir las reivindicaciones antes de la publicación internacional. Adicionalmente, se debe hacer énfasis en que la protección provisional solo está disponible en algunos Estados.

Qué partes de la solicitud internacional se pueden corregir?

De acuerdo con el Artículo 19, solo las reivindicaciones pueden ser corregidas.

Durante la fase internacional, las reivindicaciones también pueden ser corregidas (o adicionalmente corregidas) de acuerdo con el Artículo 34 ante la Autoridad Examinadora Preliminar Internacional.

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Sobre la entrada en la fase nacional, todas las partes de la solicitud internacional pueden ser corregidas de acuerdo con el Artículo 28 o, en donde aplique, Artículo 41.

Cuando ?

Dentro de los 2 mese a partir de la fecha de remisión del reporte de búsqueda internacional o 16 mes es a partir de la fecha de la prioridad, cualquier límite de tiempo que expire de último. Se debe anotar, sin embargo, que la correcciones se considerarán que han sido recibidas a tiempo si ella son recibidas por la Oficina Internacional después de la expi ración del límite de tiempo aplicable pero antes de terminación de las preparaciones técnicas para la publicación internacional (Regla 46.1).

Cuando no registrar la correcciones ?

Las correcciones solo pueden ser registradas con la Oficina Internacional .y no con la Oficina receptoras o la Autoridad de Búsqueda Internacional (Regla 46.2).

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Cuando una petición para examen preliminar internacional ha sido/registrada, ver adelante.

Cómo ?

Ya sea por la cancelación de una o más de las reivindicaciones completas, mediante la adición de una o más reivindicaciones nuevas o por la corrección del texto de una o más de las reivindicaciones como se presentaron.

Una hoja de reemplazo debe ser presentada para cada hoja de las reivindicaciones que, en la cuenta de un a corrección o correcciones, difiere de la hoja originalmente presentada.

Todas las reivindicaciones que aparecen en la una hoja de reemplazo debe ser numerada en números arábigos. Cuando una reivindicación se cancela, no se requiere renumerar las otras r eivindicaciones. En todos los casos en donde las reivindicaciones se renumeren, ellas deben ser renumeradas consecutivamente (Instrucciones Administrativas, Sección 205(b)).

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Las correcciones deben ser hechas en el idioma en el idioma en el que la solicitud internacional se publica.

Qué documentos deben/pueden acompañar las correcciones?

Carta (Sección 205(b)):

Las correcciones deben ser presentadas con una carta.

La carta no será publicada con la solicitud internacional y las reivindicaciones corregida s. No se debe confundir con la "Declaración de acuerdo con el Art 19(1))" (ver adelante, según "Declaración de acuerdo con el Artículo 19(1)").

La carta debe ser en Inglés o Francés, a decisión del solicitante. Sin embargo, si el idioma de la solicitud internacional es Inglés, la carta debe ser en Inglés; si el idioma de la solicitud internacional es Francés, la carta debe ser en Francés.

Notas al Formulario PCT/ISA220 (primera hoja) (Julio 1998; reimpreso Abril 2002)

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NOTAS AL FORMULARIO PCT/ISA/220 (Continuación)

La carta debe indicar las diferencias entre las reivindicaciones presentadas y las reivindicaciones corregidas. Debe, en particular, indicar, en relación con cada reivindicación que aparezca en la solicitud internacional (se entiende que las indicaciones idénticas que conciernen a varias reivindicaciones se pueden agrupar), si

(i) La reivindicación no es cambiada;

(ii) La reivindicación es cancelada;

(iii) La reivindicación es nueva;

(iv) La reivindicación reemplaza una o más reivindicaciones presentadas;

(v) La reiv indicación es el resultado de la división de una reivindicación presentada.

Los siguientes ejemplos ilustran la manera en la cual las correcciones deben ser explicadas en la carta acompañante:

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1. [En donde originalmente hubo 48 reivindicaciones y después de las correcciones de algunas reivindicaciones hay 51]:

"Reivindicaciones 1 a 29, 31, 32, 34, 35, 37 a 48 reemplazadas por reivindicaciones corregidas que llevan los mismos números; reivindicaciones 30, 33 y 36 no cambiadas; reivindicaciones nuevas agregadas 49-51".

2. [En donde originalmente hubo 15 reivindicaciones y después de la corrección de todas las reivindicaciones hay 11]:

"Reivindicaciones 1 a 15 reemplazadas por las reivindicaciones corregidas 1 a 11".

3. [En donde originalmente hubo 14 reivindicaciones y las correcciones consisten en cancelar algunas reivindicaciones y agregar nuevas reivindicaciones]:

"Reivindicaciones 1 a 6 y 14 no modificadas; reivindicaciones 7 a 13 canceladas; reivindicaciones nuevas agregadas 15, 16 y 17". O

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"Reivindicaciones 7 a 13 canceladas; reivindicaciones nuevas agregadas 15, 16 y 17; todas las otras reivindicaciones no modificadas".

4. [En donde se hacen varias clases de correcciones]

"Reivindicaciones 1 -10 no modificadas; reivindicaciones 11 a 13, 18 y 19 canceladas; reivindicaciones 14, 15 y 16 reemplazadas por reivindicación 14 corregida; la reivindicación 17 subdividida en reivindicaciones corregidas 15, 16 y 17; reivindicaciones nuevas agregadas 20 y 21".

"Declaración de acuerdo con el Artículo 19(1)" (Regla 46.4)

Las correcciones pueden estar acompañadas por una declaración que explica las correcciones e indica cualquier impacto que tales correcciones pueden tener sobre la descripción y los dibujos (que no pueden ser corregidos de acuerdo con el Artículo 19(1)).

La declaración será publicada con la solicitud internacional y las reivindicaciones corregidas.

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Esta debe estar en el idioma en el que la solicitud internacional está publicada.

Esta debe ser breve, que no exceda 500 palabras si es en inglés o si se traduce al inglés.

Esta no se debe confundir con y no reemplaza la carta que indica las diferencias entre las reivindicaciones como se presentaron y como se corrigieron. Se debe presentar en una hoja separada y se debe identificar por un encabezado, preferibleme nte mediante el uso de las palabras "Declaración de acuerdo con el Artículo 19(1)".

Esta no puede contener comentarios despectivos sobre el reporte de búsqueda internacional o la importancia de las citaciones contenidas en ese reporte. Solo se puede hacer referencia a las citaciones, importancia a una reivindicación dada, contenida en el reporte de búsqueda internacional en relación con una corrección de esa reivindicación.

Consecuencia de si una petición para examen preliminar internacional ya ha sido presentada

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Si, en la fecha de presentar cualquier corrección y cualquier declaración acompañante, de acuerdo con el Artículo 19, ya se ha presentado una petición para examen prelimar internacional, el solicitante preferiblemente debe, en la fecha de present ación de las correcciones (y cualquier declaración) con la Oficina Internacional, registrar también una copia de tales declaraciones con la Autoridad Examinador Preliminar Internacional (y de cualquier declaración) y, donde se requiera, una traducción de t ales correcciones par a el procedimiento ante esa A utoridad (ver reglas 55.3(a) y 62.2, primera sentencia). Para información adicional, ver las Notas al formulario de petición (PCT/IPEA/40I).

Consecuencia con respecto a la traducción de la solicitud internacional para entrada en fase nacional

Se dirige la atención del solicitante al hecho de que, en la entrada a la fase nacional, una traducción de las reivindicaciones como se corrigieron de acuerdo con el Artículo 19 se puede presentar a las Oficinas elegidas/designadas, en cambio de, o en adición a, la traducción de las reivindicaciones como se presentaron.

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Para detalles adicionales sobre los requerimientos de cada Oficina elegida/designada, ver la *Guía del Solicitante PCT*, Volumen II.

Votas al Formulari o PCT/ISA220 (segunda hoja) (Julio 1998; Reimpreso Abril 2002)

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BLOQUE Y ESTERILLA DE REVESTIMIENTO

ANTECEDENTES DE LA INVENCIÓN

La presente invención se refiere de manera general a un bloque de revestimiento. Más particularmente, la invención se relaciona con un bloque de revestimiento, utilizado a lo largo el perímetro exterior de una esterilla de revestimiento, siendo ajustado a un tamaño para eliminar el uso de bloques de revestimiento de tamaño medio, que tienden a levantar los bordes de la esterilla de revestimiento debido al flujo el agua sobre esta. Adicionalmente, se describe una esterilla de revestimiento adaptada para utilizar el bloque de revestimiento anteriormente descrito a lo largo de su perímetro exterior e inhibir así el empujamiento hacia arriba sobre la esterilla desde el borde periférico.

Las esterillas de revestimiento son utilizadas para inhibir la erosión del suelo proveniente de áreas de fluido de aguas, líneas costeras, rebosaderos, canales de sobre flujo, canales de drenaje, rampas de botes y similares. Las esterillas de revestimiento habituales son

formadas de bloques de concreto articulados que se inter aseguranjuntas y conforman unas características de desempeño hidráulicaespecíficas.

La patente U.S.4,370,075,otorgada a Scales,figura 3 muestrauna característica común de las esterillas de revestimiento Por ejemplo,los bloques de una hilera superior están des centraos y no alineados con los bloque de una hilera inmediatamenteinferior con el fin de formar una columna alineada.Este alineamiento descentrado de hileras es llamado una "u nión corrida" y es deseable porque los bloques es tán interaseguradosde tal forma que cada bloque esta en contacto con un número mayor de bloques para una más esta ble configuración. Sin embargo,como resultado,los bordes de la esterillade revestimientcn o son uniformes y,como se ve mejor en las figuras 3 y 5,los bloques de tamaño medio se deben agregar a los extremos de las hileras de esterilla de revestimientcalternativas para hacer los extremos de la hilera uniformementealineados. Existen varios pro blemas asociados con los bloques de tama ño medio. Primero,los bloques de tamaño medio tienencontacto a lo largo de menos lados o superficies que los bloques dentro e los bordes de la esterilla Segundo,los bloques de tamaño

medio tienen contacto con menos bloques totales. Esto problemas conducen a un tercer problema de desplazamiento del bloque de tamaño. Debido a su tamaño más pequeño y a su contacto decrecido con lo bloques adyacentes, los bloque de tamaño medio tienden a levantarse y rotar por un empujamiento hidráulico hacia arriba. Debido a las conexiones de cable que se extienden transversales a las hileras de colchón, el levantamiento de los bloques de tamaño medio puede dar como resultado el ondulamiento de los bordes de la esterilla de revestimiento. Esto es altamente indeseable.

En vista de las deficiencias de los bloques de revestimiento conocidos, es evidente que el bloque de revestimiento es necesario para utilizar con una esterilla de revestimiento que tenga un tamaño que mantenga las hileras de esterilla de revestimiento uniformemente alineadas, teniendo unas características de desempeño hidráulicas mejoradas, y que inhiba el levantamiento de los bloques de revestimiento

RESUMEN DE LA INVENCIÓN

Es un objeto de la presente invención sumi nistrar un bloque de revestimientoque tenga dimensiones las cuales, cuando se utiliza en una esterillade revestimientoden como re sultado unos bordes homogéneosde una esterillade revestimiento

Es un objetivo adicional de esta invenciónsuministrar un bloque de revestimientoque tenga un tamaño que inhiba el empujamiento hidráulicohacia arriba .

Es un objetivo aun adicional de esta invención suministrar un bloque de revestimientoque se utilice para formar una esterillade revestimientoe inhiba el ondulamiento el borde de la esterillade revestimiento

Es aú n un objetivo adicional de esta invención suministrar un bloque de revestimientoque tenga al menos un domo que disminuya la velocidad del agua que pasa por encima de la esterillade revestimiento

Es aú n un objetivo adi cional suministrar un bloque de revestimientoque tenga una pluralidad de huecos allí para crecimiento el follaje.

También es un objeto de la presente invención suministrar un bloque de revestimiento que tenga paredes laterales biseladas.

Un bloque de revestimiento, que comprende un bloque substancialmente rectangular que tiene dos nichos verticales en forma de U a lo largo de cada uno de los primeros y segundos lados, un tercer lado que tiene un par de nichos en forma de U y tres proyecciones, un cuarto lado que tiene tres nichos en forma de U que se oponen a las tres proyecciones del tercer lado y un par de proyecciones que se oponen a los nichos del tercer lado. El bloque de revestimiento tiene una superficie superior e inferior, la superficie superior tiene un domo sobre esta, el domo circunda una primera y una segunda abertura de pared biselada. Una tercera abertura y una cuarta abertura se extienden desde la superficie superior a la superficie inferior del bloque. La primera y la segunda abertura de pared biselada se extienden verticalmente hacia abajo a través del domo a la superficie de fondo del bloque. El segundo lado tiene un domo medio que circunda el par de nichos en forma de U biselados. El domo y el medio domo son formados por una pared curvilínea que se extiende desde la superficie

superior a una meseta superior plana. La primera, segunda, tercera y cuarta aberturas son preferible mente substancialmente rectangulares. Los nichos en forma de U del primer y segundo lados for man cada uno aberturas medias.

El bloque de revestimiento comprende además al menos un ducto que se extiende a través de dicho bloque de revestimiento, preferible mente de un nicho a una proyección opuesta. El al meno un ducto se extiende longitudinalmente entre dicho tercer y cuarto lados.

La primera y segunda aberturas son vertical mente biseladas desde una porción superior mas amplia a una porción inferior mas estrecha. El nicho en forma de U del segundo lado es biselado. El primero, segundo y cuarto lados son biselados adyacentes a la superficie superior el bloque de revestimiento

Todos los objetivos anterior mente subrayados se deben entender como sola mente ejemplos y muchos mas objeti vos de la invención pueden ser recogidos de la presente descripción. Por lo tanto, ninguna interpretación limitante de los objetivos anotados se debe entender sin

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leer adicional mentela especificación completa, reivindicaciones,y dibujos incluidos con esta.

BREV E DESCHPCIÓN DE LOS DIBUJOS

Los aspectos y ventajas de la presente invención serán mejor entendidos cuando la descripción detallada de las modalidades preferidas es tomada en conjunto con los dibujos que la acompañan,en los cuales:

La figura 1 muestra una vista en perspectiva de un bloque a mano derecha d y de un bloque de revestimientode tamaño medio e la presente invención;

La figura 2 muestra una vi sta superior del bloque a mano derecha y un bloque de revestimientode tamaño medio de la figura 1;

LA figura 3 muestra una vista lateral del bloque a mano derecha y un bloque de revestimientomedio a lo largo de la línea3 -3 de la figura 2;

La figura 4 muestra una vista superior de la esterillade revestimientode la presente invención;

La figura 5 muestra una vista en perspectiva del bloque a mano izquierda y un bloque de revestimientode tamaño medio de la presenteinvención;

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La figura 6 muestra una vista superior del bloque a mano izquierda y el bloque de revestimientode tamaño medio de la figura 5;

La figura 7 muestra una vista lateral el bloque a mano izquierda y un bloque de revestimientomedi o a lo largo de la línea3 -3 de la figura 6;

La figura 8 muestra una esterillade revestimiento que utiliza bloques de extremo de esterillade revestimiento de tamaño medio;

La figura 9 muestra una vista de planta de los cables, mangos,y arandelas utilizadas en la esterillade revestimientoe la presente invención;

La figura 10 muestra u na vista superiorde una esterilla de revestimientoformada de bloques de mano derecha y mano izquierda y unos bloques de revestimiento de tamaño medios e las figura 1 y 5.

DESCRIPCION DETA LLA DA DE LA M ODA LIDA D PREFERIDA

El Bloque de Revestimiento

La presenteinvención será ahora descrita en conjunto con los dibujos,en relación inicial mentea la figura 1,se muestra un bloque de revestimientoy es que tiene un

tamaño de "medio bloque" y un diseño de mano derecha. El bloque y el diseño medio se denotan como de mano derecha o mano izquierda debido a su ubicaciónsobre el lado derecho de la esterillade revestimientoo el lado izquierdo de una hilera.

El bloque de revestimiento10 se forma de un concreto pre moldeado de acuerdo a una primer modalidad de la presente invención, El bloque de revestimiento10 tiene una superficie de arriba o superior substancial mente plana12 y una superpie inferior o de fondo 15,y una pluralidad de parees later ales:el primer lado 24a,el segundo lado 24b,el tercer lado 25a,y el cuarto 25b se extienden entre la superficie superior 12 y la superficie inferior 15. El bloque de revestimiento10 general menteti ene una forma substancialmenteregular pero puede s er cualquier otra forma des eable. La altura del bloque 10 puede variar dependiendo de la aplicación y las características hidráulicasdeseada,pero esta general menteentre 70 y 240 mm. Cuando las fuerzas h idrodinámicas mayores están involucradas, la altura del bloque 10 se puede incrementar.

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Como se muestra en las figuras 3 y 4, la superficie inferior o e fon do 15 del bloque de revestimiento 10 puede preferiblemente ser substancialmente plana o mas plan t al como para hacer un conta cto substancialmente continuo con el suelo el sustrato 210 o el medio de filtro 200 que puede preferible mente estar localizado entre el suelo de sustrato 210 y la esterillade revestimiento 100. La superficie superior 12 del bloq ue de revestimiento 10 es pr eferiblemente para lela con la superficie inferior 15 pero se puede diseñar de manera diferente dependiendo de la aplicación. Además, el bloque 10 puede tene r algún componente de agarre construido dentro de la superficie inferior 15 para incrementar la eficiencia de agarre del bloque 10 al medio del filtro 200 o al suelo el sustrato 210.

Como se muestra en las figuras 2 y 3 la superficie superior 12 tiene al e nos una abe rtura 20 que se extiende a través el bloque 10 a la superfi cie inferior 15. La al me nos una abertu ra 20 permite el crecimiento del follaje a través del bloque substancialmente 10 desde el suelo del sustrato por de bajo de la esterillade revestimiento 100, mostrada en la figura 4. En otras palabras, el follaje sumi nistra un ancla para la

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esterilla100 y tiene una segun da ventaja de agr egar una apariencia estéticamentep lacentera a la vía acuática.

Otra ventaja de las aberturas 20 es que las aberturas 20 liberan presión hidrostática desde la parte inferior de la esterillade revestimiento100. Las aberturas 20 le permiten al agua fluir a través e los bloques aliviando de esta manera la presión hidrostáticainmediata mente inferior y reducir el levantamiento hacia arriba del la esterillade revestimiento100. Una vent aja final de las aberturas o huecos 20 es que ellos disipan la energía tal como de las olas que pue de ab atir la esterillade revestimiento100. La al m enos una abertura 20 preferiblementetiene proporciones iguales con las aberturas 20 de los otros bloques de revestimiento10 con l fin de suministrar una apariencia estéticamente placentera cuando se forma la esterillade revestimiento

Las paredes laterales 24 a,24b,25 a,25b pueden ser completamentebiseladas pero estánpreferible mente incluidas en al men os las paredes laterales parcial mente verticales. Las paredes laterales opuesta 24 a 24b son paredes laterales paralelas y opuestas 25 a,25b son paralelas. En combinaciónlas paredes late rales 24a,24b,

25a,25b, preferiblementeforman un cuadriláterocque s e extiende entre la superficie superior 12 y la superficie inferior 15. En la presente modalidad,las paredes laterales 24a,24b,25 a,25b ti ene una porción vertical 21 y u na porción bisela da 22 que se extiende por encima de la porción vertical 21 a la superficie superior 12 de tal forma que la superf icie superior12 tiene menos área de superficie que la superficie inferior15.

Además,las porciones biseladas 22 también le permiten a los bloques de revestimiento10 facilitar la articulación d la matriz so bre las superficies no planas. Las pociones biseladas 22 suministran una apariencia estéticamente placentera así como también suministran una localización para partículas para que el agua se asiente y llene en las co sturas entre los bloques 10. La pared la teral 24b es una pared lateral verti cal y no tiene una porció n biselada similar a las paredes 24 a,25 a 25b. La pared lateral 24b no es biselada porque el domo medio 30 que puede terminar en un bloque adyacente con el domo medio. Dentro e las paredes latera les opuestas 25 a,25b existe una pluralidad de nichos 26 y proyecciones28.

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Los nichos 26 son preferiblementeen forma de U. Como se ve en las figuras 2 y 3 los lados 24 a del bloque de revestimiento10 tienen preferiblementetres proyecciones 28 que tien e una porción vertical 21 y unas porciones biseladas 22, como se discutió previa mente. El lado 24 a tiene preferiblementeun par de nichos en forma de U 23. Sin embargo, a dife rencia de las proyecciones28, los nichos 23 no tiene n una porción biselada de la pared lateral. Los nichos 23 son de hecho la mitad de una abertura 20 que esta completa mente formada al ubicar un bloque adyacente 10 en la esterillade revestimiento Como se muestra en la figura 2, las aberturas 20 no tiene parees biseladas y por lo tan to los nichos 23 no son tampoco biselados. También, las aberturas 20 y 18 son de tamaño similar a la superficie de fondo 15 del bloque pero sobre la superficie superior12 las dimensiones pueden ser tal que las abe rturas 18 son mayores. Las paredes laterales biseladas disminuirán por lo tanto esta dimensión en la medida en que la abertura se mueva de sde la superficie superior 12 a la superficie inferior 15.

La pared lateral opuesta 24b también tiene preferiblementeun par e nichos 38 con par edes laterales 38a y paredes biseladas 39. La pared lateral opuesta 24b

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tiene también preferiblementetres proyecciones36. Las proyecciones36 comprenden un domo medio 30, que en cooperación con el bloque adyacente 10 puede formar un domo completo, y se discutirácon ma yor detalle adelante. La pared lateral opuesta 25 a, tiene al menos un nicho 26.

Preferiblementedos nichos 26 son canales en forma de U y tiene esquinas curvadas 26 a. Los nichos en forma e U 26 facilitan la instalación de los bloques de interaseguramiento adyacentes 10 de la esterillade revestimiento100, suministrando aun un ajuste firme.

Entre los nichos 26 están las proyecciones28 también para interaseguramiento con los bloquesa dyacentes 10. Adicionalmente, las proyecciones28 y los nichos 26 permiten un ajuste de unión de cubrimiento descentrado que de cómo resultado el contacto con al menos cuatro bloques adyacentes. Las proyecciones28 pue den ser curvilíneasen forma de U, angulada, o configuradas de cualquier otra manera en tanto los nichos 26 t engan una forma de esterilla En los extremos del lado 25 a están las esq uinas 27 a. Las esquinas 27 a son recluidas o truncadas para formar nichos medios. Cuando se ubican adyacentes a otro bloque de revestimiento10 que tiene

una esquina truncada adyacente, se forma un canal o nicho completo mediante esquinas adyacentes 27 a en la cual las proyecciones 28 pueden ser fácilmente ajustadas o interaseguradas a los bloques de revestimiento para estabilizar la esterillade revestimiento 100. Los nichos 26 y la proyecciones 28 son preferiblemente de iguales proporciones de tal forma que los bloques 10 son intercambiables con otros bloques 10 de varias tandas de manufactura.

Como se muestra en las figuras 1, 3 y 4 que se extienden entre paredes laterales opuestas 25 a y 25b, es al menos un ducto o túnel 40. El ducto 40 se extiende a través de las paredes laterales 25 a y 25b de tal forma que un cable 42 puede pasar a su través para interasegurar las hileras 102, 106 que forman la esterillade revestimiento 100. Preferiblemente, un ducto 40 se localiza e cada nicho 26 a lo largo de la pared lateral opuesta 25b y que se extiende a través de la proyección 28 en la pared lateral opuesta 25a. Los ductos 40 están ubicados de esta manera con el fin de no pasar a través e las aberturas 18, 20 y el follaje que crece allí. Los ductos 40 también le permiten al agua fluir a través del bloque 10 y de esta manera aliviar la presión hidrostática.

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Las paredes laterales opuestas 28b también tienenuna pluralidad de proyecciones28 y nicho s 26. En razón a que preferiblementelos tres ductos 40 se extienden desde las proyecciones28 de la paredes laterales25 a a los nichos 26 de la pare lateral 25b,existen preferiblementetres nichos 26 a lo largo e la pared lateral 25b. Los nichos 26 son preferiblementeen forma de canal y tienen iguales proporciones que los nicho s 26 y la proyecciones28 a lo largo de la pared lateral 25 a. De manera similar,las proyecciones 28 de la pared lateral 25b tienen preferiblementeproporciones iguales a los nicho s 26 y las proyecciones28 de la pared lateral 25 a. Esto le permite a los bloques ser intercambiables así como también interasegurarse en ambas uniones paralelas y preferiblemente,esquema de uniónconcorridos. En los extremos de las paredes laterales25b est án las esquinas 27b. A diferencia de las esquinas 27 a que son truncadas, cada esquina 27b forma una proyección media 28. Esto le permite a los bloques de revestimiento10 e una primer hilera,por ejemplo la hilera 102,interasegurarse con la hilera adyacente por ejemplo 106,y formar un colchón como se ve clara menteen la figura 4. Cuandose utiliza la unión corrida como se muestra en la figura 4,tanto los bloques de tamaño estándar 104,como el bloque y los

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bloques de revestimientode tamaño medio 10 y el bloque 110 discutido a delante, de la presente invención se ponen en contacto con al menos cuatro de otros bloques. Esta da como resultado un interaseguramiento más estable y una esterillamayor 100.

Refiriendo de nuevo a las figuras 2 y 3 , que se extienden hacia arriba desde la superficie superior 12 del bloque de revestimiento10 pue de ser al menos un domo 13. El domo 13 se forma de concreto pre moldeado y puede tener paredes curvilíneas de paredes bisela das 14 que se extiendendesde la superficie superi or 12 a la parte superior de un domo o a una meseta superior plana16. La parte superior del domo 16 es general menteplana y tiene al me nos una abertura 18 que se extiende desde la parte superior del domo 16 a través de la s uperficie inferior 15. La al me nos una abertura 18 es preferiblemente sùbstancialmenterectangular de forma y puede ser de cualquier forma deseada que permita el crecimiento del follaje y alivie la pr esión hidrostática. Las aberturas 18 tiene un par de paredes vertica les 18 a que son paralelas a las paredes laterales 25 a y 25b y las paredes biseladas 19 que corren paralelas a las paredes 24 a y 24b. La al menos una abertura 18 tam bién suministra las

ventajas descritas con la al menos un a abertura 20 tal como disipar energía y liberar presió n hidrostática. El domo 13 reduce la velocidad del agua sobre la . esterilla de revestimiento100 inhibiendo la erosión y disipando la energía. El domo 13 también reduzcala fuerza de corte originada por el movimiento el agua por encima de la esterillade revestimiento100.Adicional mente,el flujo más lento a través del colchón100 le permite a algunas partículas asentarse sobre el colchóndentro de las uniones, agregándoleestabilidad.

También extendiéndosedesde la superficie superior 12 se encuentra un d omo medio 30. El domo medio 30 esta formado de paredes curvilíneas 34,sin embargo la pared curvilínea34 puede alternativa menteser una pared biselada. El domo medio 30 tiene al menos una, preferiblementedos,nichos 38 formados allípor paredes biselada 39 y paredes dé nicho 38 a. Las paredes biseladas 39 se biselan desde una porción superior mas ancha a una porción inferior mas estrecha. La pared bis elada 39 se extiende desde la pa rte superior del domo 33 a la superficie inferior 15 del bloque de revestimiento10. El domo medio 30 forma un domo completo tal como el domo 13 cuando se ubica adyacente al bloque de revestimientoque

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tiene un domo medio sobre un domo medio adyacente de extremo 30. El domo medio 30 también disminuye la velocidad del agua por enc ima de la esterillade revestimiento100 e incrementa al asentamiento de partículas en las aberturas 18,20 de la esterilla100.

Como se ve mejor en la figura 4,deben existir dos tipos de bloque y un bloque de extremo medio. El bloque de mano derecha 10 tiene un bloque de mano izquierda pareja 110 que es estructuralmente un a imagen espejo equivalente de l bloque de mano derecha 10. La principal diferencia es que el domo 13 y el domo medio 30 son inversos de tal forma que el domo medio 30 esta al lado izqui erdo del bloque 110 y el domo completo 113 a mano derecha del bloque 110. Como se vera clara menteen la figura 4,si el bloque 10 es utilizado en lugar del bloque 110,entonces este no se alinearía adecuadamentecon el bloque adyacente de la hilera 106,po r lo tanto,el bloque de mano izquierda 110 se utiliza para completar la esterillade revestimiento 100 que tiene los bordes alineados .

Como se muestra en la figura 5,6 y 7,el bloque de mano izquierda 110 es mostrado como una imagen espejo del bloque 10. El bloque de revestimiento de mano izquierda

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110 tiene una superficiesuperior 112,una superficie inferior 115,y 4 paredes laterales 124a,124b,125 a, 126b.En relación a la figura 6,el domo completo 113 es mostrado sobre el lado derecho y del bloque 1 10 y el domo medio 130 es mostrado al lado izquierdo del bloque 110, opuesto a la disposición del bloque 10.El bloque 110 comprende abertura 118,120 que corresponden a las aberturas 18,20 del bloque 10.El bloque 110 también comprende 3 nichos 126 a lo largo del lado 125b y tres proyecciones opuestas 128 a lo largo del lado 125a.Esta disposición permite el alineamientoadecuado de las aberturas y el domo en la esterilla de revestimiento 100. Más aún,esto permite el alineamiento adecuado de los ductos 4 0 de tal forma que el cable 42 se pueda extender a través de la esterilla de revestimiento completa 100.

La Esterilla de Revestimiento

La pluralidad de bloques de revestimiento interasegurados 10,110 forman un colchón de revestimiento, matriz,o esterilla 100 como se muestra en la figura 4.El colchón 100 puede ser formado de bloques 10,110 solamente pero es preferiblemente formado utilizando bloques de tamaño estándarmás pequeño 104 que tienen dos proyecciones a

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través de la pared lateral superior y d os nichos a través de la pared lateral inferior, también. Como se muestra en la figura 4, un método preferible para formar el colchón 100 es con una unión de c orrimiento. La unión de corrimientoes formada de hileras descentradasde bloques de revestimiento de tal forma que el colchón está interasegurado y os bloques 10, 104, 110 en contacto a menos con otros 4 bloques. Sin embargo, la unión de corrimiento da como resultado hileras de alineamiento no homogéneocuando igual númerode bloques son utilizados en cada hilera. Más específicamente, alternando las hileras están bloques medios demasiado cortos en cada extremo y que requieren que se agreguen medios bloques a estos. Sin embargo, como se discutió anteriormente existen problemasasociados con e l uso de bl oques de tamaño medios mostrados en la figura 8.

El colchón 100 se puede formar de bloques de revestimiento 10, 104, 110. En hileras alternativas, son utilizados bloques de revestimiento 1 0, 110 en los extremos de la hil era 106 para ejecutar un colchón 10 0 que tenga h ileras de alineamiento homogéneosin el uso de bloques de tamaño medios. Como resultado, los problemas asociados a los bloques de tamaño med io, tal como el

levantamiento y el giramiento del medio bloque y el ondulamiento de los bordes de la es terilla se evitan debido a la resistencia de corte suministrada por los bloques 10,110.

La esterilla de revestimiento 100 está comprendida de una primerahilera 102 de bloques de revestimiento de tamaño estándar104.La primer hilera 102 puede ser de cua lquier longitud deseable para una aplicación dada aunque la esterilla 100 puede consistir de cualquier número de hileras deseables.Una segunda hilera106 se forma teniendo un bloque de mano izquierda y un bloque de revestimiento de tamaño medio 110 en el extremo izquierdo de la hilera 106,una pluralidad de bloques de tamaño estándar104,y un bloque de mano derecha y un bloque de revestimiento de tamaño medio 10 en el extremo derecho de la segunda hilera 106 que da como resultado una hilera 106 que está u niformemente alineada con la hilera 102.

La esterilla de revestimiento 100 está construida hilera por hilera hasta que se obtiene la matriz de tamaño deseado.Preferiblemente,la construcción del colchón 100 ocurre en una instalación de fabricación pero p uede,en su lugar ocurrir en el sitio de la instalación del

colchón.Cuando las hileras 102,106 están completas,se ubica un cable 42 a través de los ductos 40.El alineamiento de los nichos 26 y las proyecciones 28 de las hileras alternativasoriginan qu e los ductos 40 de la pluralidad de los bloques 10 este alineado.Al utilizar los bloques de revestimiento 10,110 en cada extremo de las hileras alternativas,se forma un colchón 100 que tiene unos bordes uniformemente alineados en el uso de bloques de ta maño medio,mostrados en la figura 8.

Alternativamente,se puede formar una esterilla de revestimiento 300 de bloques 10,110 solamente y es mostrada e la figura 10.Las hileras 306 de la esterilla de revestimiento 300 se forman al ubicar bloques de mano derecha 10 y bloques d e mano izquierda 110 en un esquema alternativo.El pat rón de interaseguramiento de los bloques 10,110 también permiteque los ductos 40 estén alineados de tal formaque el cable 42 se pueda utilizar para interasegurar los bloques 10, 110.Como se muestra en la figura 10,la esterilla de revestimiento 300 puede tener una unión paralela que origina que los bordes de la esterilla de revestimiento estén alineados.

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Una vez que los bloques remoldeados son colocados dentro del colchón 100 o 300,el cable 42 se utiliza para interasegurar las hileras de la esterilla 100.El cable es preferiblemente de acero inoxidable pero puede alternativamente ser hecho de acero inoxidable galvanizado,o una cuerda de poliéster de alta resistencia.Adicionalmente,el cable o la cuerda deben exhibir diferentes características de resistencia a la mayoría de los ácidos,álcalis,y solventes y deben ser impermeables a pudrición,mildew, y microorganismos asociados con ambientes marinos.El cable 42 se extiende preferiblemente a través de los ductos 40 cuando la esterilla 100 está perfectamente formada.Por ejemplo,un cable 42 puede ser iniciado en lado 25b de una primer hilera y se extiende a través del ducto 40 por la longitud de una esterilla de revestimiento 100.En el extremo opuesto de la esterilla 100 el cable puede emerger del ducto 40 en por ejemplo el lado 25 a.En cada ducto 40,se ubica una arandela 46 y un mango 44 sobre el cable 42 cuando este entra y sale de la esterilla de revestimiento 100,como se muestra en la figura 9.Los mangos 44 fijados sobre el cable 42 adyacente a los huecos del ducto 40 de tal forma que el movimiento libre del cable 42 a través de colchón 100 se inhiben.Este

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proceso se continúahasta que el colchón 100 se construye completamente.

Una vez se completa esto, se ubica un medio de filtro o una tela de filtro 200 sobre el suelo del sustrato donde está localizado el colchón 100. La tela de filtro 200 inhibe la erosión del suelo del sustrato 210 y es hecha preferiblemente de un g eotextil que comprende un polímero sintético tal como propileno, etileno, éster, o anida y los inhibidores para resistir el deterioro debido a luz ultravioleta y calor. Una vez que la tela de fábrica 200 es ubicada, el colchón 100 es movido por una grúa u otro dispositivo de levantamiento, preferiblemente con la ayuda de una barra propagadora a una posición por encima de la tela de filtro 200. Finalmente, el colchón 100 es descendido en la vía acuática, rampa, o canal y ubicado sobre la parte superior de la tela de filtro 200. En la alternativa, la esterilla 100 puede ser construida en el sitio de construcción en lugar de en una instalación de fabricación. Como se discutió anteriormente, los bloques que comprenden la esterilla 100 pueden tener proyecciones sobre una superficie inferior 15 que incrementa la fuerza la resistencia de la fuerza de corte al movimiento del agua.

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La descripción anterior detallada es dada principalmente por claridad de entendimiento y no para que sean entendidas limitaciones inneces arias de esta cuyas modificaciones serán obvias para aquellos expertos en la técnica luego de leer la descripción y pueden ser hechas sin apartarsedel espíritu de la invención y el alcance de las reivindicaciones finales.

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REIV INDICA CIONES

1. Una esterilla de revestimiento que comprende:

   Al menos una primer hilera de bloques de tamaño estándar;

   Al menos una segunda hilera de dichos bloques de tamaño estándar que tienen bloques de extremo con un tamaño de bloque y medio en los segundos extremos de hilera;

   Dicha esterilla de revestimiento definida al alternar dicha al menos una primera y segunda hilera en una unión de corrimiento y bordes uniformemente alineados.

2. La esterilla de revestimiento de la reivindicación 1, dichos bloques de extremo incluyen:

   Dos nichos en forma de U dentro de primeros y segundos lados paralelos opuestos;

   Un tercer lado que tiene tres proyecciones;

   Un cuarto lado que tiene tres nichos en forma U opuestos a dichos tres proyecciones de dicho tercer lado;

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Dicho tercer y cua rto lados son lados paralelos opuestos y cada uno tiene una porción superior y una porción inferior, dicha porción superior de dicho tercer y cuarto lados son biselados interiormente;

Dicho tercer lado tiene extremos que definen cada uno nichos e n forma d e U con tamaño medio y dicho cuarto lado tiene extremos que definen cada uno proyecciones de tamaño medio;

Una superficie superior de dicho al menos un bloque que tiene un domo con una primera y segundas aberturas que se extienden hacia abajo a su través;

Un domo medio dispuesto sobre dichas superficies superior opuesta a dicho domo;

En donde dos de dichos nichos con forma de U se extienden a través de dicho domo medio;

Dicha superficie superior incluye terceras y cuartas aberturas que se extienden haci a abajo y se ubican entre dicho domo y dicho domo medio;

Estos dos nichos en forma de U de dicho domo medio tienen un tamaño de aproximadamente la mitad de dichas primeras y segundas aberturas;

Dichos nichos se extienden a través de dicho domo medo siend o aproximadamente la mitad del tamaño de dichas aberturas que se extienden a través de dicho domo.

3. La esterilla de revestimiento que incluye la de la reivindicación 1,dichos bloques de tamaño estándartienen primeros y segundos lados que incluyen dos nichos ,un tercer tamaño que tiene dos proyecciones y un cuarto lado que tiene dos nichos.

4. La esterilla de revestimiento de la reivindicación 6,dichos bloques de tamaño estándar y dicho bloque de extremo comprende además paredes laterales adyacentes parcialmente biseladas.

5. La esterilla de revestimiento de la reivindicación 1 que comprende además un cable que interconecta dichos bloques.

6. La esterilla de revestimiento de la reivindicación 1,dicho al menos uno de los

bloques de extremo inhib e dichos bordes de esterilla de revestimiento de ondularse.

7. La esterilla de revestimiento de la reivindicación 1, dicha esterilla formada de concreto premoldeado.

8. La esterilla de revestimiento que incluye al menos un bloque y un bloque de extremo de tamaño medio, que comprende una pluralidad de primeras hileras alternantes de bloques y segundas hileras de bloques que forman una esterilla; dicha primera hilera incluye una pluralidad de bloques de un primer tamaño que tienen primeros y segundos lad os que incluyen dos nichos, un tercer lado que tiene dos proyecciones y un cuarto lado que tiene dos nichos.
dicha segunda hilera incluye un bloque de mano derecha y una mitad en un extremo derecho de dicha segunda hilera y un bloque de mano izquierda y u na mitad en el extremo izquierdo de dicha segunda hilera, y una pluralidad de bloques de tamaño estándarque se extienden

entre dichos bloques de mano derecha y mano izquierda;

dichas primeras y segundas hileras en una unión corrida;

dicha esterilla tien e bordes de mano derecha y mano izquierda sustancialmente de manera uniformemente alineada;

dichos bloques y dichos bloques de tamaño medio son aproximadamente una y media veces más grandes que dicho primer tamaño de bloque;

en donde dicho bloque y dicho s bloques de tamaño medio comprenden:

dos nichos en forma de U dentro de primeros y segundos lados paralelos opuestos;

un tercer lado que tiene dos nichos eN forma de U definidos por proyecciones;

un cuarto lado que tiene Tres nichos en forma definidos porproyecciones;

dichos tercer y cuartos lados siendo lados paralelos opuestos y cada uno teniendo una porción superior e inferior,dichas porciones superior siendo biseladasinteriormente;

dicho tercer lado tiene extremos que definen cada uno un nicho en f orma de U y dicho cuarto

lado que tiene extremos que definen cada uno proyecciones de tamaño medios;

una superficie superior de dicho bloque que tiene un domo con primeras y segundas aberturas que se extienden hacia abajo a su través;

un domo medo dispue sto sobre dichas superficies superior opuesto a dicho domo ;

dicho domo medio tiene dos de dichos nichos en forma de U que se extienden a su través;

dicha superficie superior incluyendo terceras y cuartas aberturas que se extienden hacia abajo y ubicadas entre dicho domo y dicho domo medio;

dichos nichos de dicho domo medio siendo de un tamaño de aproximadamente la mitad de dicha primera y segunda aberturas.

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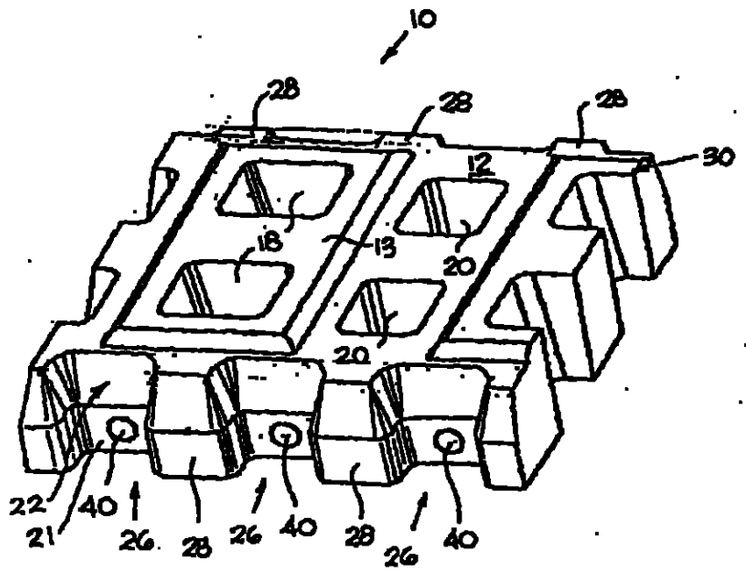
(54) Title: REVETMENT BLOCK AND MAT



(57) Abstract: A revetment mat formed of revetment blocks having a size of about one and a half times larger than standard sized blocks and made of precast concrete. The one and one-half size revetment blocks are used as end blocks in alternating rows. The end block preferably has four sidewalls having a plurality of projections and recesses for interlocking with adjacent revetment blocks. When used to form the revetment mat, the mat has evenly aligned edges and resists upward lift and turning associated with half blocks of the prior art.

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SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Declarations under Rule 4.17:

— *as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii)) for the following designations AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW, ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG)*

— *as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii)) for all designations*

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Revetment Block and Mat

BACKGROUND OF THE INVENTION

The present invention relates generally to a revetment block. More particularly, the invention relates to a revetment block, used along the outer perimeter of a revetment mat, being sized to eliminate the use of half size revetment blocks, which tend to lift the edges of the revetment mat due to the flow of water thereover. Additionally, a revetment mat is disclosed adapted to use the above described revetment block along its outer perimeter and thus inhibit upward thrust on the mat from the peripheral edge.

Revetment mats are used to inhibit soil erosion from areas of flowing water along, for instance, shorelines, spillways, overflow channels, drainage channels, boat ramps, and the like. Current revetment mats are formed from articulated concrete blocks that interlock together and conform to specific hydraulic performance characteristics.

U.S. Patent 4,370,075, issued to Scales, Fig. 3 shows a common characteristic of revetment mats. For example, the blocks of a top row are offset and not aligned with the blocks of an immediately lower row so as to form an aligned column. This offset alignment of rows is called a "running bond" and is desirable because the blocks are interlocked such that each block is in contact with a greater number of blocks for a more stable configuration. However, as a result, the edges of the revetment mat are not uniform and, as best shown in Figs. 3 and 5, half sized blocks must be added to the ends of alternating revetment mat rows to make the row ends evenly aligned. There are several problems associated with half sized blocks. First, the half-sized blocks have contact along fewer sides or surfaces than blocks within the edges of the mat. Second, the half-size blocks have contact with fewer total

blocks. These problems lead to a third problem of displacement of the half-size block. Due to their smaller size and decreased contact with adjacent blocks, the half size blocks tend to lift and rotate from an upward hydraulic thrust. Due to cable connections extending transverse to the mattress rows, the uplift of the half-size blocks can result in the curling of the edges of the revetment mat. This is highly undesirable.

In view of the deficiencies in known revetment blocks, it is apparent that a revetment block is needed for use with a revetment mat having a size which makes revetment mat rows evenly aligned, having improved hydraulic performance characteristics, and which inhibits uplift of the revetment block.

SUMMARY OF THE INVENTION

It is an object of the present invention to provide a revetment block having dimensions which, when used in a revetment mat, result in even edges of a revetment mat.

It is a further objective of this invention to provide a revetment block having a size which inhibits upward hydraulic thrust.

It is an even further objective of this invention to provide a revetment block which is used to form a revetment mat and inhibits revetment mat edge curling.

It is still an even further objective of this invention to provide a revetment block having at least one dome which slows the velocity of water passing above the revetment mat.

It is yet an even further objective to provide a revetment block having a plurality of holes therein for foliage growth.

It is also an object of the present invention to provide a revetment block having tapered sidewalls.

A revetment block, comprising a substantially rectangular block having two U-shaped vertical recesses along each of a first and a second sides, a third side having a pair of U-

shaped recesses and three projections, a fourth side having three U-shaped recesses opposing the three projections of the third side and a pair of projections opposing the recesses of the third side. The revetment block has a top and a bottom surface, the top surface has a dome thereon, the dome surrounds a first and a second tapered wall opening. A third opening and a fourth opening extend from the top surface to the bottom surface of the block. The first and second tapered wall openings extend vertically downward through the dome to the bottom surface of the block. The second side has a half-dome surrounding the pair of tapered U-shaped recesses. The dome and the half-dome are formed by a curvilinear wall extending from the top surface to a flat upper plateau. The first, second, third, and fourth openings are preferably substantially rectangular. The U-shaped recesses of the first and second sides each forming one-half openings.

The revetment block further comprises at least one duct extending through said revetment block, preferably from one recess to an opposed projection. The at least one duct extends longitudinally between said third and fourth sides.

The first and second openings are vertically tapered from a wider upper portion to a narrower lower portion. The U-shaped recesses of the second side are tapered. The first, third, and fourth sides are tapered adjacent the top surface of the revetment block.

All of the above outlined objectives are to be understood as exemplary only and many more objectives of the invention may be gleaned from the disclosure herein. Therefore, no limiting interpretation of the objectives noted is to be understood without further reading of the entire specification, claims, and drawings included herewith.

BRIEF DESCRIPTION OF THE DRAWINGS

The aspects and advantages of the present invention will be better understood when the detailed description of the preferred embodiment is taken in conjunction with the accompanying drawings, in which:

FIG. 1 shows a perspective view of the right-hand block and a half size revetment block of the present invention;

FIG. 2 shows a top view of the right-hand block and a half size revetment block of Fig. 1;

FIG. 3 shows a side view of the right-hand block and a half revetment block along line 3-3 of Fig. 2;

FIG. 4 shows a top view of the revetment mat of the present invention;

FIG. 5 shows a perspective view of the left-hand block and a half size revetment block of the present invention;

FIG. 6 shows a top view of the left-hand block and a half-size revetment block of Fig. 5;

FIG. 7 shows a side view of the left-hand block and a half revetment block along line 3-3 of Fig. 6;

FIG. 8 shows a revetment mat using half-size revetment mat end blocks;

FIG. 9 shows a plan view of the cable, sleeves, and washers used in the revetment mat of the present invention; and,

FIG. 10 shows a top view of a revetment mat formed of right-hand and left-hand block and a half-size revetment blocks of Figs. 1 and 5.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

The Revetment Block

The present invention will now be described in conjunction with the drawings, referring initially to Fig. 1, a revetment block 10 having a "block and a half" size and a right-hand design is shown. The block and a half design is denoted as right-hand or left-hand due to its placement on a revetment mat right side or left side of a row.

The revetment block 10 is formed from precast concrete according to a first embodiment of the present invention. The revetment block 10 has a substantially planar upper or top surface 12 and lower or bottom surface 15, and a plurality of sidewalls: first side 24a, second side 24b, third side 25a, and fourth side 25b extending between the upper surface 12 and the lower surface 15. The revetment block 10 generally has a substantially rectangular shape but may be any other desirable shape. The height of the block 10 may vary depending on the application and desired hydraulic characteristics, but is generally between 70 and 240 millimeters. When larger hydrodynamic forces are involved, the height of the block 10 may be increased.

As shown in Figs. 3 and 4, the lower or bottom surface 15 of the revetment block 10 may preferably be substantially flat or planar such as to make substantially continuous contact with either a substrate soil 210 or a filter media 200 which may preferably be located between the substrate soil 210 and revetment mat 100. The upper surface 12 of the revetment block 10 is preferably parallel with the lower surface 15 but may be designed differently depending on the application. In addition, the block 10 may have some gripping component built into the lower surface 15 to increase gripping efficiency of the block 10 to the filter media 200 or substrate soil 210.

As shown in Figs. 2 and 3, the upper surface 12 has at least one aperture or opening 20 extending through the block 10 to the lower surface 15. The at least one aperture or opening 20 allows foliage to grow through the block 10 from the substrate soil beneath the revetment mat 100, shown in Fig. 4. In other words, the foliage provides an anchor for the mat 100 and has a second advantage of adding an aesthetically pleasing appearance to the waterway. Another advantage of the openings 20 is that the openings 20 release hydrostatic pressure from beneath the revetment mat 100. The openings 20 allow water to flow through the blocks thereby relieving hydrostatic pressure therebeneath and reducing upward lift on the revetment mat 100. One final advantage of the apertures or holes 20 is that they dissipate energy such as from waves which may buffet the revetment mat 100. The at least one aperture 20 preferably has equal proportions with apertures 20 of other revetment blocks 10 so as to provide an aesthetically pleasing appearance when a revetment mat is formed.

The sidewalls 24a, 24b, 25a, 25b may be entirely tapered but are preferably include at least partially vertical sidewalls. The opposed sidewalls 24a, 24b are parallel and opposed sidewalls 25a, 25b are parallel. In combination the sidewalls 24a, 24b, 25a, 25b preferably form a quadrilateral extending between the upper surface 12 and lower surface 15. In the present embodiment, the sidewalls 24a, 25a, 25b have a vertical portion 21 and a tapered portion 22 extending above the vertical portion 21 to the upper surface 12 such that upper surface 12 has less surface area than lower surface 15. In addition, the tapered portions 22 also allow the revetment blocks 10 to facilitate articulation of the matrix over non-planar surfaces. The tapered portions 22 provide an aesthetically pleasing appearance as well as providing a location for particulate in the water to settle and fill in seams between blocks 10. Sidewall 24b is a vertical sidewall and does not have a tapered portion like sidewalls 24a, 25a, 25b. Sidewall 24b is not tapered because of the half-dome 30 which may abut an

adjacent block with a half-dome. Within the opposed sidewalls 25a, 25b are a plurality of recesses 26 and projections 28. The recesses 26 are preferably U-shaped. As seen in Figs. 2 and 3, side 24a of the revetment block 10 has preferably three projections 28 having a vertical portion 21 and tapered portions 22, as previously discussed. The side 24a also preferably has a pair of U-shaped recesses 23. However, unlike the projections 28, the recesses 23 do not have a tapered portion of sidewall. The recesses 23 are actually half of an opening or aperture 20 which is fully formed by placing an adjacent block 10 in the revetment mat. As shown in Fig. 2, apertures 20 do not have tapered walls and therefore recesses 23 are not tapered either. Also, apertures 20 and 18 are of similar size at the bottom surface 15 of the block but on the top surface 12 the dimensions may be such that the apertures 18 are larger. Tapered side walls will therefore decrease this dimension as the aperture moves from the top surface 12 to the bottom surface 15.

Opposed sidewall 24b also preferably has a pair of recesses 38 with sidewalls 38a and tapered walls 39. The opposed sidewall 24b also has preferably three projections 36. The projections 36 comprise a half-dome 30, which in cooperation with an adjacent block 10 may form a complete dome, and will be discussed in further detail below.

Opposed sidewall 25a, has at least one recess 26. The preferably two recesses 26 are U-shaped channels and having curved corners 26a. The U-shaped recesses 26 ease installation of adjacent interlocking blocks 10 of the revetment mat 100, yet still provide a firm fit. Between the recesses 26 are projections 28 also for interlocking with adjacent blocks 10. Additionally, the projections 28 and recesses 26 allow for an offset running bond fit which results in contact with at least four adjacent blocks. The projections 28 may be curvilinear, U-shaped, angled, or otherwise configured so long as the recesses 26 have a mating shape. At the ends of side 25a are corners 27a. The corners 27a are recessed or

truncated to form half recesses. When placed adjacent another revetment block 10 having an adjacent truncated corner, a full channel or recess is formed by adjacent corners 27a in which a projection 28 can easily be fitted to interlock the revetment blocks 10 and stabilize the revetment mat 100. The recesses 26 and projections 28 are preferably of equal proportions so that blocks 10 are interchangeable with other blocks 10 of various manufacturing batches.

As shown in Figs. 1, 3, and 4 extending between opposed sidewalls 25a and 25b, is at least one duct or tunnel 40. The duct 40 extends through the sidewalls 25a and 25b so that a cable 42 can pass therethrough to interlock rows 102,106 which form the revetment mat 100. Preferably, a duct 40 is located in each recess 26 along opposed sidewall 25b and extending through projection 28 in opposed sidewall 25a. The ducts 40 are positioned in this manner so as not to pass through apertures 18,20 and the foliage growing therein. The ducts 40 also allow water to flow through block 10 and thereby relieve hydrostatic pressure.

Opposed sidewall 25b also has a plurality of projections 28 and recesses 26. Since the preferably three ducts 40 extend from the projections 28 of sidewall 25a to recesses 26 of sidewall 25b, there are preferably three recesses 26 along sidewall 25b. The recesses 26 are preferably channel shaped and have equal proportions as the recesses 26 and projections 28 along sidewall 25a. Likewise, the projections 28 of sidewall 25b preferably have proportions equal to the recesses 26 and projections 28 of sidewall 25a. This allows the blocks to be interchangeable as well as interlock in both parallel bond and preferably, running bond schemes. At the ends of sidewalls 25b are corners 27b. Unlike the corners 27a which are truncated, each corner 27b forms a half projection 28. This allows revetment blocks 10 of a first row, for instance row 102, to interlock with an adjacent row, for instance 106, and form a mattress as clearly seen in Fig. 4. When a running bond is used, as shown in Fig. 4, both the standard size blocks 104 and the block and a half size revetment blocks 10, and block 110

discussed below, of the instant invention make contact with at least four other blocks. This results in a more stable interlock and stronger mat 100.

Referring again to Figs. 2 and 3, extending upwardly from the upper surface 12 of the revetment block 10 maybe at least one dome 13. The dome 13 is formed of precast concrete and may have curvilinear walls or tapered walls 14 which extend from the upper surface 12 to a dome top or flat upper platean 16. The dome top 16 is generally planar and has at least one aperture 18 extending from the dome top 16 through lower surface 15. The at least one aperture 18 is preferably substantially rectangular in shape but may be of any desired shape which allows for growth of foliage and relieves hydrostatic pressure. The apertures 18 have a pair of vertical walls 18a which are parallel to sidewalls 25a and 25b and tapered walls 19 which run parallel to walls 24a and 24b. The at least one aperture 18 also provide the advantages described with the at least one aperture 20 such as dissipating energy and releasing hydrostatic pressure. The dome 13 reduces the velocity of water over the revetment mat 100 inhibiting erosion and dissipating energy. The dome 13 also reduces the shear force caused by water moving above the revetment mat 100. Additionally, the slower flow across the mattress 100 allows some particulate to settle out on the mattress within its joints, adding to its stability.

Also extending from the upper surface 12 is a half dome 30. The half dome 30 is formed from a curvilinear wall 34, however the curvilinear wall 34 may alternatively be a tapered wall. The half dome 30 has at least one, preferably two, recesses 38 therein formed by a tapered walls 39 and recess walls 38a. The tapered wall 39 tapers from a wider top portion to a narrower bottom portion. The tapered wall 39 extends from a dome top 36 to lower surface 15 of revetment block 10. The half-dome 30 forms a full dome such as dome 13 when placed adjacent a revetment block having a half dome on an end adjacent half dome

30. The half-dome 30 also slows the velocity of water above the revetment mat 100 and encourages settlement of particulate into the apertures 18,20 of the mat 100.

As best shown in Fig. 4, there must be two types of block and a half end blocks. Right-hand block 10 has a matching left-hand block 110 which is structurally an equivalent mirror image of the right-hand block 10. The main difference is that dome 13 and half-dome 30 are reversed such that the half-dome 130 is on the left side of the block 110 and full dome 113 is located on the right side of the block 110. As clearly seen in Fig. 4, if the block 10 is used in place of block 110, then it would not properly align with the adjacent block of row 106. Therefore, a left-hand block 110 is used to complete the revetment mat 100 having aligned edges.

As shown in Figs. 5,6,and 7, left-hand block 110 is shown and is a mirror image of block 10. Left-hand revetment block 110 has a top surface 112, a bottom surface 115, and four sidewalls 124a,124b,125a,126b. Referring to Fig. 6, a full dome 113 is shown on the right side and of the block 110 and a half-dome 130 is shown on a left side of block 110, opposite of the arrangement of block 10. Block 110 comprises apertures 118,120 corresponding to apertures 18,20 of block 10. Block 110 also comprises three recesses 126 along side 125b and three opposed projections 128 along side 125a. This arrangement allows proper alignment of openings and dome in revetment mat 100. Moreover, it also allows proper alignment of ducts 40 such that cable 42 can extend through the entire revetment mat 100.

The Revetment Mat

The plurality of interlocked revetment blocks 10,110 form a revetment mattress, matrix, or mat 100 as shown in Fig. 4. The mattress 100 may be formed of blocks 10,110

only but is preferably formed using smaller standard size blocks 104 having two projections across a top sidewall and two recesses across a bottom sidewall, as well. As shown in Fig. 4, a preferable method of forming the mattress 100 is with a running bond. The running bond is formed of offset rows of revetment blocks so that the mattress is interlocked and the blocks 10,104,110 contact at least four other blocks. However, the running bond results in rows of uneven alignment when equal numbers of blocks are used in each row. More specifically, alternating rows are a half block too short at each end and require a half block be added thereto. However, as discussed above there are problems associated with the use of half size blocks, shown in Fig. 8.

The mattress 100 may be formed of revetment blocks 10, 104, 110. In alternating rows, revetment blocks 10,110 are used at row 106 ends to effectuate a mattress 100 having rows of even alignment without the use of half size blocks. As a result, the problems associated with the half size blocks, such as lifting and twisting of the half block and curling of the mat edges are prevented due the shear resistance provided by blocks 10,110.

The revetment mat 100 is comprised of a first row 102 of standard size revetment blocks 104. The first row 102 can be of any desirable length for a given application while the mat 100 may consist of any number of desirable rows. A second row 106 is formed having a left-hand block and a half size revetment block 110 at a left end of row 106, a plurality of standard size blocks 104, and a right-hand block and a half size revetment block 10 at a right end of the second row 106 resulting in row 106 being evenly aligned with row 102.

The revetment mat 100 is constructed row by row until a desired size matrix is obtained. Preferably, the construction of the mattress 100 occurs at a manufacturing facility but may, instead occur at the site of the mattress installation. When the rows 102,106 are completed, a cable 42 is positioned through the ducts 40. The alignment of the recesses 26

and projections 28 of alternating rows cause the ducts 40 of the plurality of blocks 10 to be aligned. By using the revetment blocks 10,110 at each end of alternating rows, a mattress 100 is formed having evenly aligned edges without the use of half-size blocks, shown in Fig. 8.

Alternatively, a revetment mat 300 may be formed of blocks 10, 110 only and is shown in Fig. 10. The rows 306 of the revetment mat 300 are formed by placing right hand blocks 10 and left-hand blocks 110 in an alternating scheme. The interlocking pattern of blocks 10, 110 also allow ducts 40 to be aligned and such that cable 42 may be used to interlock the blocks 10, 110. As shown in Fig. 10, the revetment mat 300 may have a parallel bond causing the edges of the revetment mat to be aligned.

Once the precast blocks are constructed into a mattress 100 or 300, a cable 42 is used to interlock the rows of mat 100. The cable is preferably stainless steel but may alternatively be made of galvanized stainless steel, or high strength polyester rope. Additionally, the cable or rope should exhibit excellent resistance characteristics to most acids, alkalis, and solvents and should also be impervious to rot, mildew, and microorganisms associated with marine environs. The cable 42 is preferably extended through ducts 40 when the mat 100 is fully formed. For example, a cable 42 may be started at side 25b of a first row and extend through duct 40 for the length of a revetment mat 100. At an opposite end of the mat 100 the cable may emerge from duct 40 at for instance side 25a. At each duct 40, a washer 46 and a sleeve 44 are placed on the cable 42 where it enters and exits the revetment mat 100, as shown in Fig. 9. The sleeves 44 are crimped on the cable 42 adjacent the duct holes 40 so that free movement of the cable 42 through the mattress 100 is inhibited. This process is continued until the mattress 100 is fully constructed.

Once this is completed, a filter medium or filter fabric 200 is placed over the substrate soil where the mattress 100 will be located. The filter fabric 200 inhibits erosion of the substrate soil 210 and is preferably made of a geotextile comprising a synthetic polymer such as propylene, ethylene, ester, or amide and inhibitors to resist deterioration due to ultraviolet and heat. Once the filter fabric 200 is positioned, the mattress 100 is moved by crane or other lifting device, preferably with the aid of a spreader bar, to a position above the filter fabric 200. Finally, the mattress 100 is lowered into the waterway, ramp, or channel and placed on top the filter fabric 200. In the alternative, the mat 100 may be constructed at the construction site instead of at a manufacturing facility. As discussed earlier, the blocks comprising mat 100 may have projections on a lower surface 15 increasing shear force resistance to the moving water.

The foregoing detailed description is given primarily for clearness of understanding and no unnecessary limitations are to be understood therefrom for modifications will become obvious to those skilled in the art upon reading this disclosure and may be made without departing from the spirit of the invention and scope of the appended claims.

CLAIMS

1. A revetment mat, comprising:

at least one first row of standard size blocks;

at least one second row of said standard size blocks having block and one-half size end blocks at the second row ends;

said revetment mat defined by alternating said at least one first and second rows in a running bond and evenly aligned edges.

2. The revetment mat of claim 1, said end blocks including:

two U-shaped recesses within first and second opposed parallel sides;

a third side having three projections;

a fourth side having three U-shaped recesses opposite said three projections of said third side;

said third and fourth sides being opposed parallel sides and each having an upper portion and a lower portion, said upper portion of said third and fourth sides being tapered inwardly;

said third side having ends each defining one-half size U-shaped recesses and said fourth side having ends each defining one-half size projections;

a top surface of said at least one block having a dome with first and second openings extending downwardly therethrough;

a half-dome disposed on said top surface opposite said dome;

wherein two of said U-shaped recesses extend through said half-dome;

said top surface including third and fourth openings extending downwardly and positioned between said dome and said half-dome;

said two U-shaped recesses of said half-dome being sized about one-half of said first and second openings;

said recesses extending through said half-dome being about one-half size of said openings extending through said dome.

3. The revetment mat including of claim 1, said standard size blocks having first and second sides including two recesses, a third size having two projections and a fourth side having two recesses.

4. The revetment mat of claim 6, said standard size blocks and said end blocks further comprising adjacent partially tapered sidewalls.

5. The revetment mat of claim 1 further comprising a cable interconnecting said blocks.

6. The revetment mat of claim 1, said at least one end blocks inhibiting said revetment mat edges from curling up.

7. The revetment mat of claim 1, said mat formed of precast concrete.

8. The revetment mat including at least one block and a half size end block, comprising:

a plurality of alternating first rows of blocks and second rows of blocks forming a mat;

said first row including a plurality of blocks of a first size having first and second sides including two recesses, a third side having two projections and a fourth side having two recesses;

said second row including a right hand block and a half at a right end of said second row and a left hand block and a half at a left end of said second row, and a plurality of standard sized blocks extending between said right hand and left hand blocks;

said first and second rows in a running bond;

said mat having substantially evenly aligned right hand and left-hand edges;

said block and a half size blocks being about one and one half times larger than said first size block;

wherein said block and a half size blocks comprises:

two U-shaped recesses within first and second opposed parallel sides;

a third side having two U-shaped recesses defined by projections;

a fourth side having three U-shaped recesses defined by projections;

said third and fourth sides being opposed parallel sides and each having an upper and a lower portion, said upper portions being tapered inwardly;

said third side having ends each defining one-half U-shaped recesses and said fourth side having ends each defining one-half size projections;

a top surface of said block having a dome with first and second openings extending downwardly therethrough;

a half-dome disposed on said top surface opposite said dome;

said half-dome having two of said U-shaped recesses extending there through;

said top surface including third and fourth openings extending downwardly and positioned between said dome and said half-dome;

said recesses of said half-dome being sized about one-half of said first and second openings.

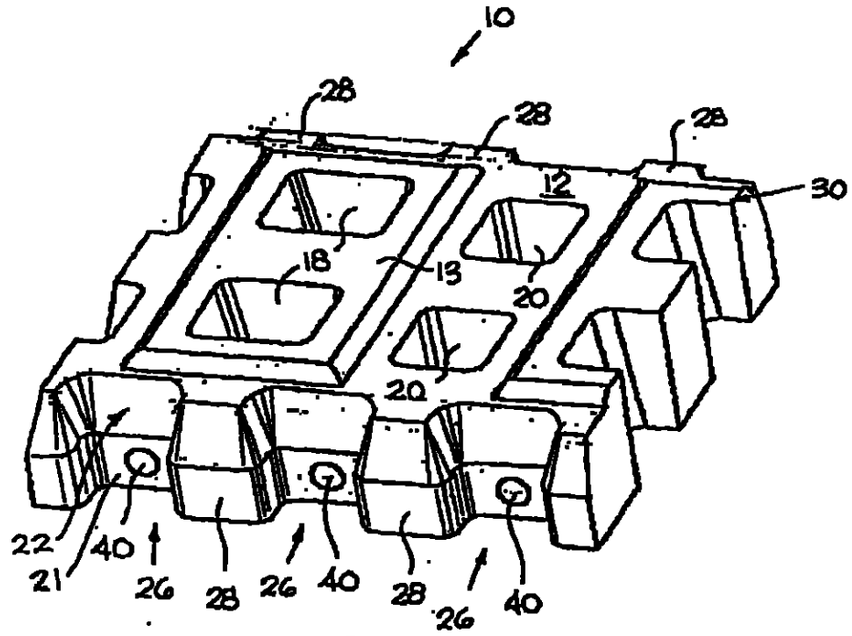

FIG. 1

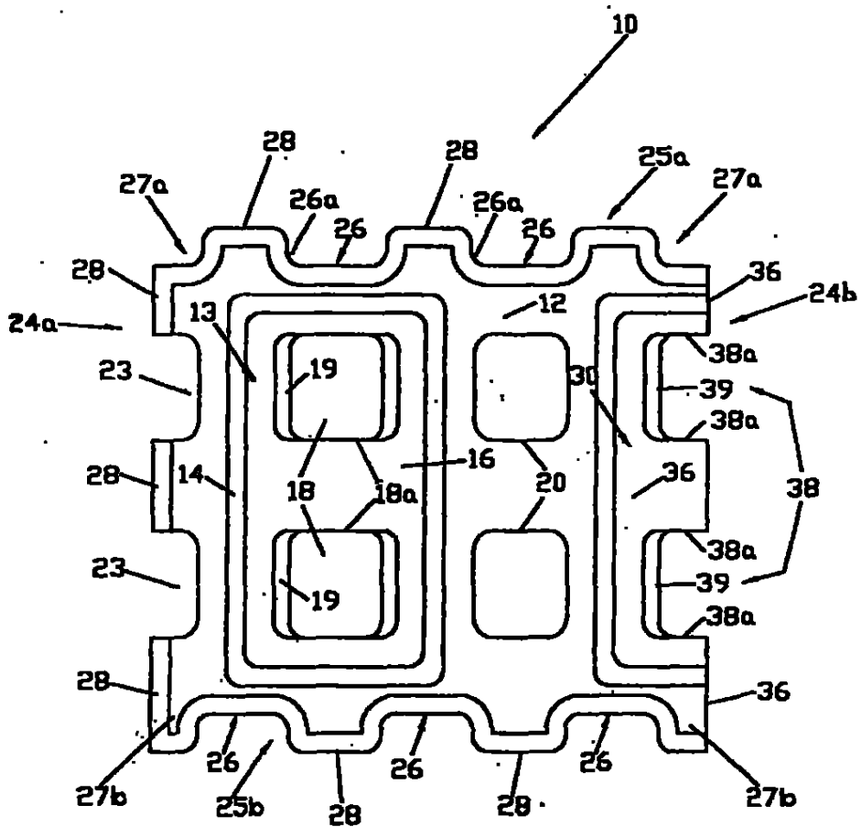
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FIG. 2

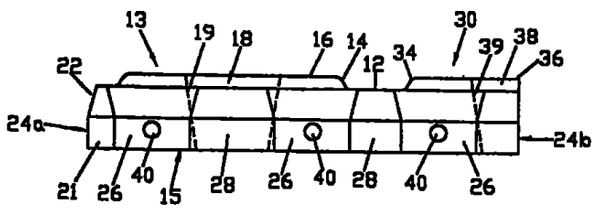
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FIG 3

FIG. 4

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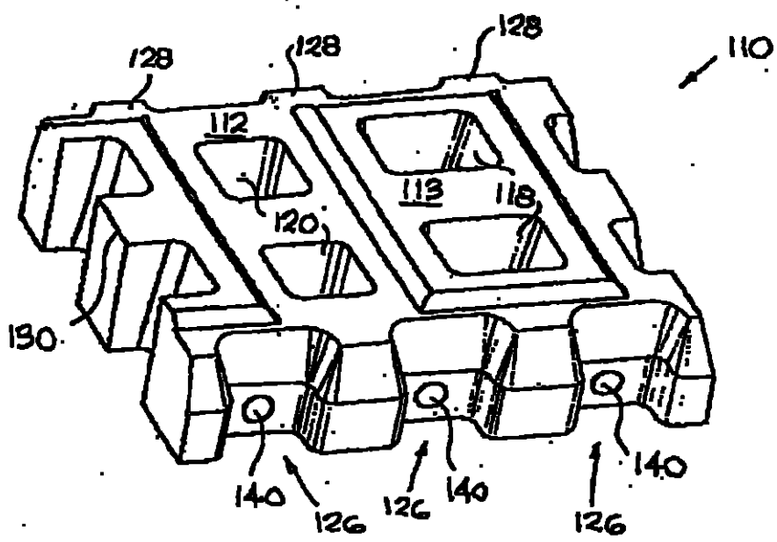

FIG. 5

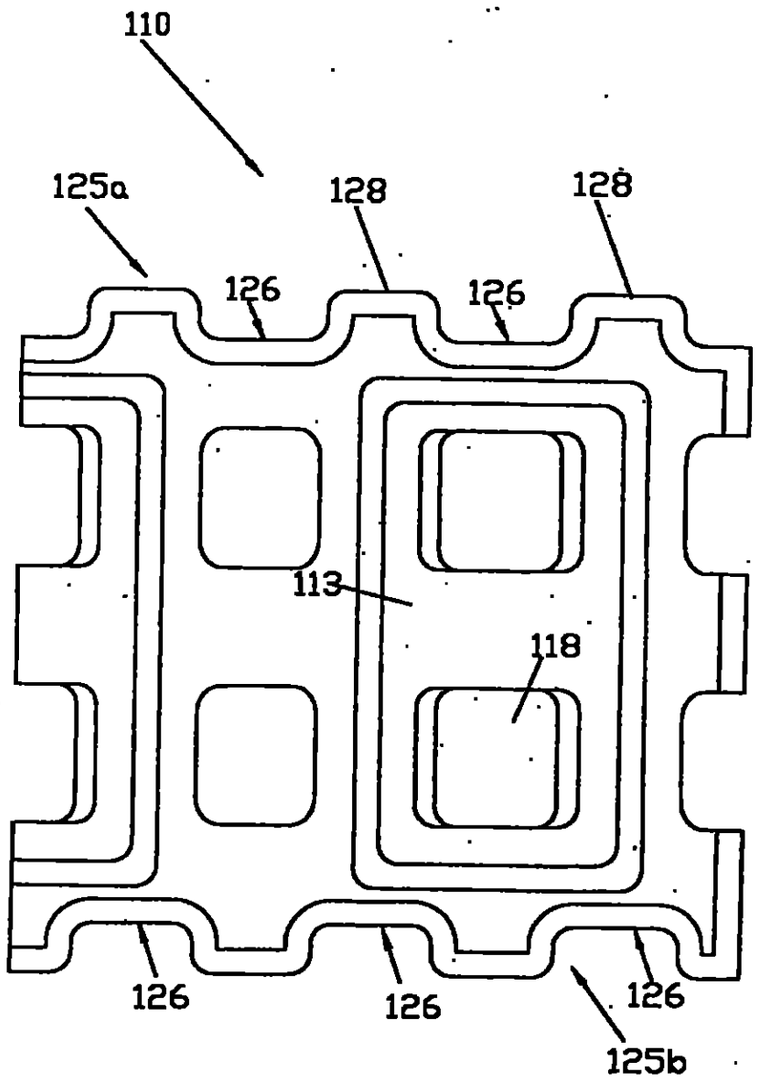

FIG. 6

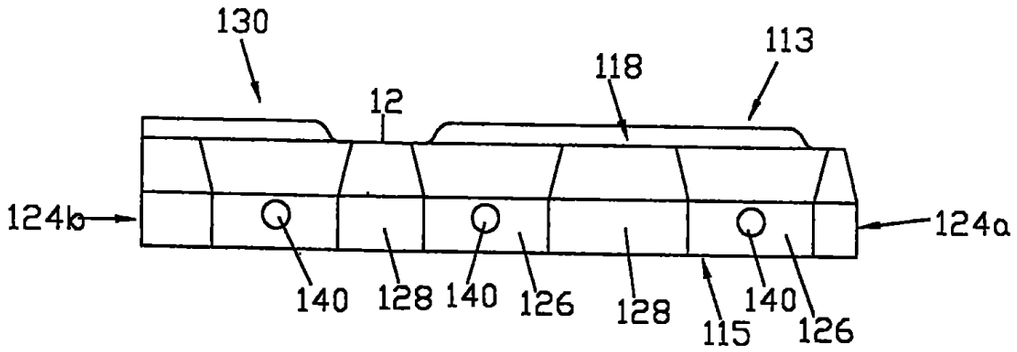

FIG. 7

FIG 8

FIG 9

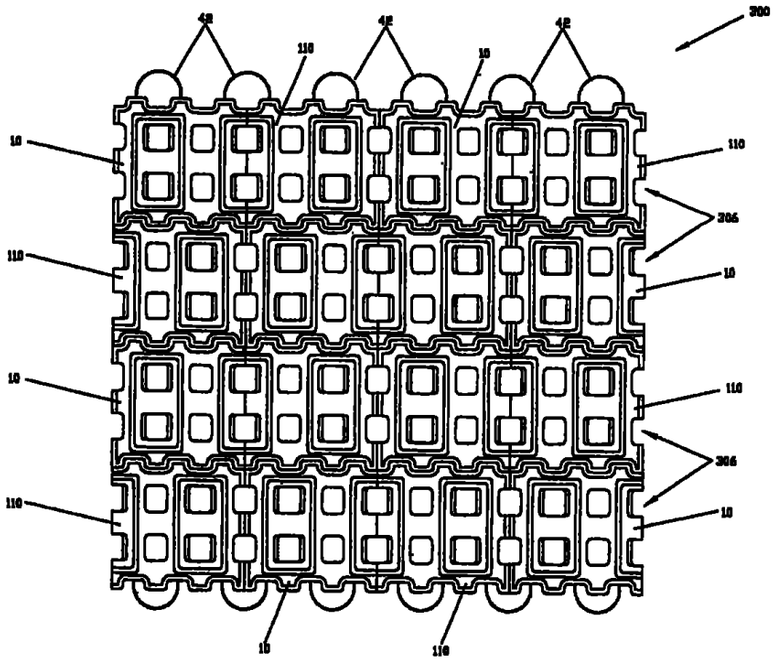

FIG 10

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PATENT COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference ARMORFLEX	FOR FURTHER ACTION	see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below.
International application No. PCT/US03/00776	International filing date (*day/month/year*) 10 January 2003 (10.01.2003)	(Earliest) Priority Date (*day/month/year*) 10 January 2002 (10.01.2002)
Applicant LEE MASONRY PRODUCTS, LLC		

This international search report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This international search report consists of a total of 1 sheets.

☒ It is also accompanied by a copy of each prior art document cited in this report.

1. Basis of the Report
   a. With regard to the language, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.
   ☐ the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).
   b. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international search was carried out on the basis of the sequence listing:
   ☐ contained in the international application in written form.
   ☐ filed together with the international application in computer readable form.
   ☐ furnished subsequently to this Authority in written form.
   ☐ furnished subsequently to this Authority in computer readable form.
   ☐ the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
   ☐ the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.
2. ☐ Certain claims were found unsearchable (See Box I).
3. ☐ Unity of invention is lacking (See Box II).
4. With regard to the title,
   ☒ the text is approved as submitted by the applicant.
   ☐ the text has been established by this Authority to read as follows:

5. With regard to the abstract,
   ☐ the text is approved as submitted by the applicant.
   ☒ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. The figure of the drawings to be published with the abstract is Figure No. 1
   ☒ as suggested by the applicant. ☐ None of the figures
   ☐ because the applicant failed to suggest a figure.
   ☐ because this figure better characterizes the invention.

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INTERNATIONAL SEARCH REPORT

International application No.

PCT/US03/00776

Box III TEXT OF THE ABSTRACT (Continuation of Item 5 of the first sheet)

The technical features mentioned in the abstract do not include a reference sign between parentheses (PCT Rule 8.1(d)).

NEW ABSTRACT

A revetment mat (100) formed of revetment blocks having a size of about one and a half times larger (10, 110) than standard sized blocks (104) and made of precast concrete. The one and one-half size revetment blocks (10, 110) are used as end blocks in alternating rows. The end block preferably has four side walls having a plurality of projections (28) and recesses (26) for interlocking with adjacent revetment blocks. When used to form the revetment mat (100), the mat has evenly aligned edges and resists upward lift and turning associated with half blocks of the prior art.

100

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US03/00776

A. CLASSIFICATION OF SUBJECT MATTER
IPC(7) : E02B 3/14
US CL : 405/16, 18, 33; 52/590.2, 592.1, 603, 604, 606; 404/38, 40, 41
According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
U.S. : Please See Continuation Sheet

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 4,370,075 A (SCALES) 25 January 1983 (25.01.1983), col.4, lines 23-68; col.5, line 1-67; col.6, lines 1-56.	1 and 3-7
A	US 6,050,044 A (McINTOSH) 18 April 2000 (18.04.2000), entire document.	8
A	US 4,182,089 A (COOK) 08 January 1980 (08.01.1980), entire document.	1
A	US 6,508,607 A (SMITH et al) 21 January 2003 (21.01.2003), entire document.	1-8

☐ Further documents are listed in the continuation of Box C. ☐ See patent family annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
19 April 2003 (19.04.2003)	27 FEB 2004
Name and mailing address of the ISA/US Commissioner of Patents and Trademarks Box PCT Washington, D.C. 20231 Facsimile No. (703)305-3230	Authorized officer John Shuk Hilsenbeck Lee Telephone No. (703) 308-6777

Form PCT/ISA/210 (second sheet) (July 1998)

INTERNATIONAL SEARCH REPORT

PCT/US03/00776

Continuation of B. FIELDS SEARCHED Item 1:
405/ 15, 16, 17, 18, 21, 22, 33; 52/590.2, 592.1, 596, 603, 604, 606, 608, 609; 404/34, 37, 38, 39, 40, 41; D25/112, 113, 114, 115, 116, 118; D21/484, 489, 491, 492, 500, 501, 503, 504, 505

NOTES TO FORM PCT/ISA/220 (continued)

The letter must indicate the differences between the claims as filed and the claims as amended. It must, in particular, indicate, in connection with each claim appearing in the international application (it being understood that identical indications concerning several claims may be grouped), whether

(i) the claim is unchanged;
(ii) the claim is cancelled;
(iii) the claim is new;
(iv) the claim replaces one or more claims as filed;
(v) the claim is the result of the division of a claim as filed.

The following examples illustrate the manner in which amendments must be explained in the accompanying letter:

1. [Where originally there were 48 claims and after amendment of some claims there are 51]:
"Claims 1 to 29, 31, 32, 34, 35, 37 to 48 replaced by amended claims bearing the same numbers; claims 30, 33 and 36 unchanged; new claims 49 to 51 added."
2. [Where originally there were 15 claims and after amendment of all claims there are 11]:
"Claims 1 to 15 replaced by amended claims 1 to 11."
3. [Where originally there were 14 claims and the amendments consist in cancelling some claims and in adding new claims]:
"Claims 1 to 6 and 14 unchanged; claims 7 to 13 cancelled; new claims 15, 16 and 17 added." or
"Claims 7 to 13 cancelled; new claims 15, 16 and 17 added; all other claims unchanged."
4. [Where various kinds of amendments are made]:
"Claims 1-10 unchanged; claims 11 to 13, 18 and 19 cancelled; claims 14, 15 and 16 replaced by amended claim 14; claim 17 subdivided into amended claims 15, 16 and 17; new claims 20 and 21 added."

"Statement under Article 19(1)" (Rule 46.4)

The amendments may be accompanied by a statement explaining the amendments and indicating any impact that such amendments might have on the description and the drawings (which cannot be amended under Article 19(1)).

The statement will be published with the international application and the amended claims.

It must be in the language in which the international application is to be published.

It must be brief, not exceeding 500 words if in English or if translated into English.

It should not be confused with and does not replace the letter indicating the differences between the claims as filed and as amended. It must be filed on a separate sheet and must be identified as such by a heading, preferably by using the words "Statement under Article 19(1)."

It may not contain any disparaging comments on the international search report or the relevance of citations contained in that report. Reference to citations, relevant to a given claim, contained in the international search report may be made only in connection with an amendment of that claim.

Consequence if a demand for international preliminary examination has already been filed

If, at the time of filing any amendments and any accompanying statement, under Article 19, a demand for international preliminary examination has already been submitted, the applicant must preferably, at the time of filing the amendments (and any statement) with the International Bureau, also file with the International Preliminary Examining Authority a copy of such amendments (and of any statement) and, where required, a translation of such amendments for the procedure before that Authority (see Rules 55.3(a) and 62.2, first sentence). For further information, see the Notes to the demand form (PCT/IPEA/401).

Consequence with regard to translation of the international application for entry into the national phase

The applicant's attention is drawn to the fact that, upon entry into the national phase, a translation of the claims as amended under Article 19 may have to be furnished to the designated/elected Offices, instead of, or in addition to, the translation of the claims as filed.

For further details on the requirements of each designated/elected Office, see the *PCT Applicant's Guide*, Volume II.

NOTES TO FORM PCT/ISA/220

These Notes are intended to give the basic instructions concerning the filing of amendments under Article 19. The Notes are based on the requirements of the Patent Cooperation Treaty, the Regulations and the Administrative Instructions under that Treaty. *In case of discrepancy between these Notes and those requirements, the latter are applicable.* For more detailed information, see also the *PCT Applicant's Guide*, a publication of WIPO.

In these Notes, "Article," "Rule" and "Section" refer to the provisions of the PCT, the PCT Regulations and the PCT Administrative Instructions, respectively.

INSTRUCTIONS CONCERNING AMENDMENTS UNDER ARTICLE 19

The applicant has, after having received the international search report, one opportunity to amend the claims of the international application. It should however be emphasized that, since all parts of the international application (claims, description and drawings) may be amended during the international preliminary examination procedure, there is usually no need to file amendments of the claims under Article 19 except where, e.g. the applicant wants the latter to be published for the purposes of provisional protection or has another reason for amending the claims before international publication. Furthermore, it should be emphasized that provisional protection is available in some States only.

What parts of the international application may be amended?

Under Article 19, only the claims may be amended.

During the international phase, the claims may also be amended (or further amended) under Article 34 before the International Preliminary Examining Authority. The description and drawings may only be amended under Article 34 before the International Preliminary Examining Authority.

Upon entry into the national phase, all parts of the international application may be amended under Article 28 or, where applicable, Article 41.

When? Within 2 months from the date of transmittal of the international search report or 16 months from the priority date, whichever time limit expires later. It should be noted, however, that the amendments will be considered as having been received on time if they are received by the International Bureau after the expiration of the applicable time limit but before the completion of the technical preparations for international publication (Rule 46.1).

Where not to file the amendments?

The amendments may only be filed with the International Bureau and not with the receiving Office or the International Searching Authority (Rule 46.2).

Where a demand for international preliminary examination has been/is filed, see below.

How? Either by cancelling one or more entire claims, by adding one or more new claims or by amending the text of one or more of the claims as filed.

A replacement sheet must be submitted for each sheet of the claims which, on account of an amendment or amendments, differs from the sheet originally filed.

All the claims appearing on a replacement sheet must be numbered in Arabic numerals. Where a claim is cancelled, no renumbering of the other claims is required. In all cases where claims are renumbered, they must be renumbered consecutively (Administrative Instructions, Section 205(b)).

The amendments must be made in the language in which the international application is to be published.

What documents must/may accompany the amendments?

Letter (Section 205(b)):

The amendments must be submitted with a letter.

The letter will not be published with the international application and the amended claims. It should not be confused with the "Statement under Article 19(1)" (see below, under "Statement under Article 19(1)").

The letter must be in English or French, at the choice of the applicant. However, if the language of the international application is English, the letter must be in English; if the language of the international application is French, the letter must be in French.

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From the INTERNATIONAL BUREAU

PCT

NOTICE INFORMING THE APPLICANT OF THE COMMUNICATION OF THE INTERNATIONAL APPLICATION TO THE DESIGNATED OFFICES

(PCT Rule 47.1(c), first sentence)

To:

SALAZAR, John, R.
Middleton Reutlinger
2500 Brown & Williamson Tower
Louisville, KY 40202
ETATS-UNIS D'AMERIQUE

Date of mailing *(day/month/year)*	
24 July 2003 (24.07.03)	
Applicant's or agent's file reference	IMPORTANT NOTICE
ARMORFLEX	

International application No.	International filing date *(day/month/year)*	Priority date *(day/month/year)*
PCT/US03/00776	10 January 2003 (10.01.03)	10 January 2002 (10.01.02)

Applicant

LEE MASONRY PRODUCTS, LLC

1. Notice is hereby given that the International Bureau has communicated, as provided in Article 20, the international application to the following designated Offices on the date indicated above as the date of mailing of this notice:

   CH, EP, KP, KR, US

   In accordance with Rule 47.1(c), third sentence, those Offices will accept the present notice as conclusive evidence that the communication of the international application has duly taken place on the date of mailing indicated above and no copy of the international application is required to be furnished by the applicant to the designated Office(s).

2. The following designated Offices have waived the requirement for such a communication at this time:

   AE, AG, AL, AM, AP, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EA, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OA, OM, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW

   The communication will be made to those Offices only upon their request. Furthermore, those Offices do not require the applicant to furnish a copy of the international application (Rule 49.1(a-*bis*)).

3. Enclosed with this notice is a copy of the international application as published by the International Bureau on 24 July 2003 (24.07.03) under No. 03/060240

4. **TIME LIMITS for filing a demand for international preliminary examination and for entry into the national phase**

   The applicable time limit for entering the national phase will, subject to what is said in the following paragraph, be 30 MONTHS from the priority date, not only in respect of any elected Office if a demand for international preliminary examination is filed before the expiration of 19 months from the priority date, but also in respect of any designated Office, in the absence of filing of such demand, where Article 22(1) as modified with effect from 1 April 2002 applies in respect of that designated Office. For further details, see *PCT Gazette* No. 44/2001 of 1 November 2001, pages 19926, 19932 and 19934, as well as the *PCT Newsletter*, October and November 2001 and February 2002 issues.

   In practice, time limits other than the 30-month time limit will continue to apply, for various periods of time, in respect of certain designated or elected Offices. For regular updates on the applicable time limits (20, 21, 30 or 31 months, or other time limit), Office by Office, refer to the *PCT Gazette*, the *PCT Newsletter* and the *PCT Applicant's Guide*, Volume II, National Chapters, all available from WIPO's Internet site, at http://www.wipo.int/pct/en/index.html.

   For filing a demand for international preliminary examination, see the *PCT Applicant's Guide*, Volume I/A, Chapter IX. Only an applicant who is a national or resident of a PCT Contracting State which is bound by Chapter II has the right to file a demand for international preliminary examination (at present, all PCT Contracting States are bound by Chapter II).

   It is the applicant's sole responsibility to monitor all these time limits.

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland	Authorized officer Judith Zahra
Facsimile No.(41-22) 740.14.35	Telephone No.(41-22) 338.91.11

Form PCT/IB/308 (April 2002)

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(81) Designated States *(national)*: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

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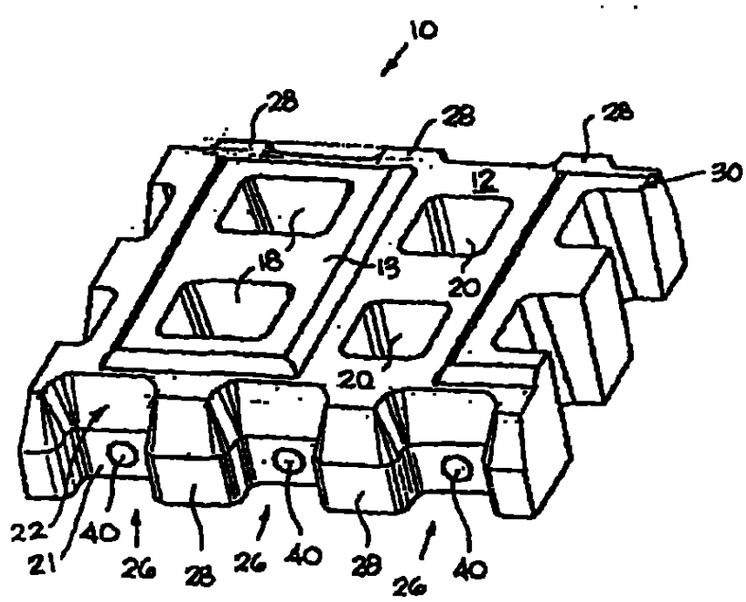
[Continued on next page]

(54) Title: REVETMENT BLOCK AND MAT



(57) Abstract: A revetment mat formed of revetment blocks having a size of about one and a half times larger than standard sized blocks and made of precast concrete. The one and one-half size revetment blocks are used as end-blocks in alternating rows. The end block preferably has four sidewalls having a plurality of projections and recesses for interlocking with adjacent revetment blocks. When used to form the revetment mat, the mat has evenly aligned edges and resists upward lift and turning associated with half blocks of the prior art.

WO 03/060240 A2

SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Declarations under Rule 4.17:

— *as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii)) for the following designations AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW, ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG)*

— *as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii)) for all designations*

— *of inventorship (Rule 4.17(iv)) for US only*

Published:

— *without international search report and to be republished upon receipt of that report*

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

Revetment Block and Mat

BACKGROUND OF THE INVENTION

The present invention relates generally to a revetment block. More particularly, the invention relates to a revetment block, used along the outer perimeter of a revetment mat, being sized to eliminate the use of half size revetment blocks, which tend to lift the edges of the revetment mat due to the flow of water thereover. Additionally, a revetment mat is disclosed adapted to use the above described revetment block along its outer perimeter and thus inhibit upward thrust on the mat from the peripheral edge.

Revetment mats are used to inhibit soil erosion from areas of flowing water along, for instance, shorelines, spillways, overflow channels, drainage channels, boat ramps, and the like. Current revetment mats are formed from articulated concrete blocks that interlock together and conform to specific hydraulic performance characteristics.

U.S. Patent 4,370,075, issued to Scales, Fig. 3 shows a common characteristic of revetment mats. For example, the blocks of a top row are offset and not aligned with the blocks of an immediately lower row so as to form an aligned column. This offset alignment of rows is called a "running bond" and is desirable because the blocks are interlocked such that each block is in contact with a greater number of blocks for a more stable configuration. However, as a result, the edges of the revetment mat are not uniform and, as best shown in Figs. 3 and 5, half sized blocks must be added to the ends of alternating revetment mat rows to make the row ends evenly aligned. There are several problems associated with half sized blocks. First, the half-sized blocks have contact along fewer sides or surfaces than blocks within the edges of the mat. Second, the half-size blocks have contact with fewer total

blocks. These problems lead to a third problem of displacement of the half-size block. Due to their smaller size and decreased contact with adjacent blocks, the half size blocks tend to lift and rotate from an upward hydraulic thrust. Due to cable connections extending transverse to the mattress rows, the uplift of the half-size blocks can result in the curling of the edges of the revetment mat. This is highly undesirable.

In view of the deficiencies in known revetment blocks, it is apparent that a revetment block is needed for use with a revetment mat having a size which makes revetment mat rows evenly aligned, having improved hydraulic performance characteristics, and which inhibits uplift of the revetment block.

SUMMARY OF THE INVENTION

It is an object of the present invention to provide a revetment block having dimensions which, when used in a revetment mat, result in even edges of a revetment mat.

It is a further objective of this invention to provide a revetment block having a size which inhibits upward hydraulic thrust.

It is an even further objective of this invention to provide a revetment block which is used to form a revetment mat and inhibits revetment mat edge curling.

It is still an even further objective of this invention to provide a revetment block having at least one dome which slows the velocity of water passing above the revetment mat.

It is yet an even further objective to provide a revetment block having a plurality of holes therein for foliage growth.

It is also an object of the present invention to provide a revetment block having tapered sidewalls.

A revetment block, comprising a substantially rectangular block having two U-shaped vertical recesses along each of a first and a second sides, a third side having a pair of U-

shaped recesses and three projections, a fourth side having three U-shaped recesses opposing the three projections of the third side and a pair of projections opposing the recesses of the third side. The revetment block has a top and a bottom surface, the top surface has a dome thereon, the dome surrounds a first and a second tapered wall opening. A third opening and a fourth opening extend from the top surface to the bottom surface of the block. The first and second tapered wall openings extend vertically downward through the dome to the bottom surface of the block. The second side has a half-dome surrounding the pair of tapered U-shaped recesses. The dome and the half-dome are formed by a curvilinear wall extending from the top surface to a flat upper plateau. The first, second, third, and fourth openings are preferably substantially rectangular. The U-shaped recesses of the first and second sides each forming one-half openings.

The revetment block further comprises at least one duct extending through said revetment block, preferably from one recess to an opposed projection. The at least one duct extends longitudinally between said third and fourth sides.

The first and second openings are vertically tapered from a wider upper portion to a narrower lower portion. The U-shaped recesses of the second side are tapered. The first, third, and fourth sides are tapered adjacent the top surface of the revetment block.

All of the above outlined objectives are to be understood as exemplary only and many more objectives of the invention may be gleaned from the disclosure herein. Therefore, no limiting interpretation of the objectives noted is to be understood without further reading of the entire specification, claims, and drawings included herewith.

BRIEF DESCRIPTION OF THE DRAWINGS

The aspects and advantages of the present invention will be better understood when the detailed description of the preferred embodiment is taken in conjunction with the accompanying drawings, in which:

FIG. 1 shows a perspective view of the right-hand block and a half size revetment block of the present invention;

FIG. 2 shows a top view of the right-hand block and a half size revetment block of Fig. 1;

FIG. 3 shows a side view of the right-hand block and a half revetment block along line 3-3 of Fig. 2;

FIG. 4 shows a top view of the revetment mat of the present invention;

FIG. 5 shows a perspective view of the left-hand block and a half size revetment block of the present invention;

FIG. 6 shows a top view of the left-hand block and a half-size revetment block of Fig. 5;

FIG. 7 shows a side view of the left-hand block and a half revetment block along line 3-3 of Fig. 6;

FIG. 8 shows a revetment mat using half-size revetment mat end blocks;

FIG. 9 shows a plan view of the cable, sleeves, and washers used in the revetment mat of the present invention; and,

FIG. 10 shows a top view of a revetment mat formed of right-hand and left-hand block and a half-size revetment blocks of Figs. 1 and 5.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

The Revetment Block

The present invention will now be described in conjunction with the drawings, referring initially to Fig. 1, a revetment block 10 having a "block and a half" size and a right-hand design is shown. The block and a half design is denoted as right-hand or left-hand due to its placement on a revetment mat right side or left side of a row.

The revetment block 10 is formed from precast concrete according to a first embodiment of the present invention. The revetment block 10 has a substantially planar upper or top surface 12 and lower or bottom surface 15, and a plurality of sidewalls: first side 24a, second side 24b, third side 25a, and fourth side 25b extending between the upper surface 12 and the lower surface 15. The revetment block 10 generally has a substantially rectangular shape but may be any other desirable shape. The height of the block 10 may vary depending on the application and desired hydraulic characteristics, but is generally between 70 and 240 millimeters. When larger hydrodynamic forces are involved, the height of the block 10 may be increased.

As shown in Figs. 3 and 4, the lower or bottom surface 15 of the revetment block 10 may preferably be substantially flat or planar such as to make substantially continuous contact with either a substrate soil 210 or a filter media 200 which may preferably be located between the substrate soil 210 and revetment mat 100. The upper surface 12 of the revetment block 10 is preferably parallel with the lower surface 15 but may be designed differently depending on the application. In addition, the block 10 may have some gripping component built into the lower surface 15 to increase gripping efficiency of the block 10 to the filter media 200 or substrate soil 210.

As shown in Figs. 2 and 3, the upper surface 12 has at least one aperture or opening 20 extending through the block 10 to the lower surface 15. The at least one aperture or opening 20 allows foliage to grow through the block 10 from the substrate soil beneath the revetment mat 100, shown in Fig. 4. In other words, the foliage provides an anchor for the mat 100 and has a second advantage of adding an aesthetically pleasing appearance to the waterway. Another advantage of the openings 20 is that the openings 20 release hydrostatic pressure from beneath the revetment mat 100. The openings 20 allow water to flow through the blocks thereby relieving hydrostatic pressure therebeneath and reducing upward lift on the revetment mat 100. One final advantage of the apertures or holes 20 is that they dissipate energy such as from waves which may buffet the revetment mat 100. The at least one aperture 20 preferably has equal proportions with apertures 20 of other revetment blocks 10 so as to provide an aesthetically pleasing appearance when a revetment mat is formed.

The sidewalls 24a, 24b, 25a, 25b may be entirely tapered but are preferably include at least partially vertical sidewalls. The opposed sidewalls 24a, 24b are parallel and opposed sidewalls 25a, 25b are parallel. In combination the sidewalls 24a, 24b, 25a, 25b preferably form a quadrilateral extending between the upper surface 12 and lower surface 15. In the present embodiment, the sidewalls 24a, 25a, 25b have a vertical portion 21 and a tapered portion 22 extending above the vertical portion 21 to the upper surface 12 such that upper surface 12 has less surface area than lower surface 15. In addition, the tapered portions 22 also allow the revetment blocks 10 to facilitate articulation of the matrix over non-planar surfaces. The tapered portions 22 provide an aesthetically pleasing appearance as well as providing a location for particulate in the water to settle and fill in seams between blocks 10. Sidewall 24b is a vertical sidewall and does not have a tapered portion like sidewalls 24a, 25a, 25b. Sidewall 24b is not tapered because of the half-dome 30 which may abut an

adjacent block with a half-dome. Within the opposed sidewalls 25a, 25b are a plurality of recesses 26 and projections 28. The recesses 26 are preferably U-shaped. As seen in Figs. 2 and 3, side 24a of the revetment block 10 has preferably three projections 28 having a vertical portion 21 and tapered portions 22, as previously discussed. The side 24a also preferably has a pair of U-shaped recesses 23. However, unlike the projections 28, the recesses 23 do not have a tapered portion of sidewall. The recesses 23 are actually half of an opening or aperture 20 which is fully formed by placing an adjacent block 10 in the revetment mat. As shown in Fig. 2, apertures 20 do not have tapered walls and therefore recesses 23 are not tapered either. Also, apertures 20 and 18 are of similar size at the bottom surface 15 of the block but on the top surface 12 the dimensions may be such that the apertures 18 are larger. Tapered side walls will therefore decrease this dimension as the aperture moves from the top surface 12 to the bottom surface 15.

Opposed sidewall 24b also preferably has a pair of recesses 38 with sidewalls 38a and tapered walls 39. The opposed sidewall 24b also has preferably three projections 36. The projections 36 comprise a half-dome 30, which in cooperation with an adjacent block 10 may form a complete dome, and will be discussed in further detail below.

Opposed sidewall 25a, has at least one recess 26. The preferably two recesses 26 are U-shaped channels and having curved corners 26a. The U-shaped recesses 26 ease installation of adjacent interlocking blocks 10 of the revetment mat 100, yet still provide a firm fit. Between the recesses 26 are projections 28 also for interlocking with adjacent blocks 10. Additionally, the projections 28 and recesses 26 allow for an offset running bond fit which results in contact with at least four adjacent blocks. The projections 28 may be curvilinear, U-shaped, angled, or otherwise configured so long as the recesses 26 have a mating shape. At the ends of side 25a are corners 27a. The corners 27a are recessed or

truncated to form half recesses. When placed adjacent another revetment block 10 having an adjacent truncated corner, a full channel or recess is formed by adjacent corners 27a in which a projection 28 can easily be fitted to interlock the revetment blocks 10 and stabilize the revetment mat 100. The recesses 26 and projections 28 are preferably of equal proportions so that blocks 10 are interchangeable with other blocks 10 of various manufacturing batches.

As shown in Figs. 1, 3, and 4 extending between opposed sidewalls 25a and 25b, is at least one duct or tunnel 40. The duct 40 extends through the sidewalls 25a and 25b so that a cable 42 can pass therethrough to interlock rows 102,106 which form the revetment mat 100. Preferably, a duct 40 is located in each recess 26 along opposed sidewall 25b and extending through projection 28 in opposed sidewall 25a. The ducts 40 are positioned in this manner so as not to pass through apertures 18,20 and the foliage growing therein. The ducts 40 also allow water to flow through block 10 and thereby relieve hydrostatic pressure.

Opposed sidewall 25b also has a plurality of projections 28 and recesses 26. Since the preferably three ducts 40 extend from the projections 28 of sidewall 25a to recesses 26 of sidewall 25b, there are preferably three recesses 26 along sidewall 25b. The recesses 26 are preferably channel shaped and have equal proportions as the recesses 26 and projections 28 along sidewall 25a. Likewise, the projections 28 of sidewall 25b preferably have proportions equal to the recesses 26 and projections 28 of sidewall 25a. This allows the blocks to be interchangeable as well as interlock in both parallel bond and preferably, running bond schemes. At the ends of sidewalls 25b are corners 27b. Unlike the corners 27a which are truncated, each corner 27b forms a half projection 28. This allows revetment blocks 10 of a first row, for instance row 102, to interlock with an adjacent row, for instance 106, and form a mattress as clearly seen in Fig. 4. When a running bond is used, as shown in Fig. 4, both the standard size blocks 104 and the block and a half size revetment blocks 10, and block 110

discussed below, of the instant invention make contact with at least four other blocks. This results in a more stable interlock and stronger mat 100.

Referring again to Figs. 2 and 3, extending upwardly from the upper surface 12 of the revetment block 10 maybe at least one dome 13. The dome 13 is formed of precast concrete and may have curvilinear walls or tapered walls 14 which extend from the upper surface 12 to a dome top or flat upper plateau 16. The dome top 16 is generally planar and has at least one aperture 18 extending from the dome top 16 through lower surface 15. The at least one aperture 18 is preferably substantially rectangular in shape but may be of any desired shape which allows for growth of foliage and relieves hydrostatic pressure. The apertures 18 have a pair of vertical walls 18a which are parallel to sidewalls 25a and 25b and tapered walls 19 which run parallel to walls 24a and 24b. The at least one aperture 18 also provide the advantages described with the at least one aperture 20 such as dissipating energy and releasing hydrostatic pressure. The dome 13 reduces the velocity of water over the revetment mat 100 inhibiting erosion and dissipating energy. The dome 13 also reduces the shear force caused by water moving above the revetment mat 100. Additionally, the slower flow across the mattress 100 allows some particulate to settle out on the mattress within its joints, adding to its stability.

Also extending from the upper surface 12 is a half dome 30. The half dome 30 is formed from a curvilinear wall 34, however the curvilinear wall 34 may alternatively be a tapered wall. The half dome 30 has at least one, preferably two, recesses 38 therein formed by a tapered walls 39 and recess walls 38a. The tapered wall 39 tapers from a wider top portion to a narrower bottom portion. The tapered wall 39 extends from a dome top 36 to lower surface 15 of revetment block 10. The half-dome 30 forms a full dome such as dome 13 when placed adjacent a revetment block having a half dome on an end adjacent half dome

30. The half-dome 30 also slows the velocity of water above the revetment mat 100 and encourages settlement of particulate into the apertures 18,20 of the mat 100.

As best shown in Fig. 4, there must be two types of block and a half end blocks. Right-hand block 10 has a matching left-hand block 110 which is structurally an equivalent mirror image of the right-hand block 10. The main difference is that dome 13 and half-dome 30 are reversed such that the half-dome 130 is on the left side of the block 110 and full dome 113 is located on the right side of the block 110. As clearly seen in Fig. 4, if the block 10 is used in place of block 110, then it would not properly align with the adjacent block of row 106. Therefore, a left-hand block 110 is used to complete the revetment mat 100 having aligned edges.

As shown in Figs. 5,6,and 7, left-hand block 110 is shown and is a mirror image of block 10. Left-hand revetment block 110 has a top surface 112, a bottom surface 115, and four sidewalls 124a,124b,125a,126b. Referring to Fig. 6, a full dome 113 is shown on the right side and of the block 110 and a half-dome 130 is shown on a left side of block 110, opposite of the arrangement of block 10. Block 110 comprises apertures 118,120 corresponding to apertures 18,20 of block 10. Block 110 also comprises three recesses 126 along side 125b and three opposed projections 128 along side 125a. This arrangement allows proper alignment of openings and dome in revetment mat 100. Moreover, it also allows proper alignment of ducts 40 such that cable 42 can extend through the entire revetment mat 100.

The Revetment Mat

The plurality of interlocked revetment blocks 10,110 form a revetment mattress, matrix, or mat 100 as shown in Fig. 4. The mattress 100 may be formed of blocks 10,110

only but is preferably formed using smaller standard size blocks 104 having two projections across a top sidewall and two recesses across a bottom sidewall, as well. As shown in Fig. 4, a preferable method of forming the mattress 100 is with a running bond. The running bond is formed of offset rows of revetment blocks so that the mattress is interlocked and the blocks 10,104,110 contact at least four other blocks. However, the running bond results in rows of uneven alignment when equal numbers of blocks are used in each row. More specifically, alternating rows are a half block too short at each end and require a half block be added thereto. However, as discussed above there are problems associated with the use of half size blocks, shown in Fig. 8.

The mattress 100 may be formed of revetment blocks 10, 104, 110. In alternating rows, revetment blocks 10,110 are used at row 106 ends to effectuate a mattress 100 having rows of even alignment without the use of half size blocks. As a result, the problems associated with the half size blocks, such as lifting and twisting of the half block and curling of the mat edges are prevented due the shear resistance provided by blocks 10,110.

The revetment mat 100 is comprised of a first row 102 of standard size revetment blocks 104. The first row 102 can be of any desirable length for a given application while the mat 100 may consist of any number of desirable rows. A second row 106 is formed having a left-hand block and a half size revetment block 110 at a left end of row 106, a plurality of standard size blocks 104, and a right-hand block and a half size revetment block 10 at a right end of the second row 106 resulting in row 106 being evenly aligned with row 102.

The revetment mat 100 is constructed row by row until a desired size matrix is obtained. Preferably, the construction of the mattress 100 occurs at a manufacturing facility but may, instead occur at the site of the mattress installation. When the rows 102,106 are completed, a cable 42 is positioned through the ducts 40. The alignment of the recesses 26

and projections 28 of alternating rows cause the ducts 40 of the plurality of blocks 10 to be aligned. By using the revetment blocks 10,110 at each end of alternating rows, a mattress 100 is formed having evenly aligned edges without the use of half-size blocks, shown in Fig. 8.

Alternatively, a revetment mat 300 may be formed of blocks 10, 110 only and is shown in Fig. 10. The rows 306 of the revetment mat 300 are formed by placing right hand blocks 10 and left-hand blocks 110 in an alternating scheme. The interlocking pattern of blocks 10, 110 also allow ducts 40 to be aligned and such that cable 42 may be used to interlock the blocks 10, 110. As shown in Fig. 10, the revetment mat 300 may have a parallel bond causing the edges of the revetment mat to be aligned.

Once the precast blocks are constructed into a mattress 100 or 300, a cable 42 is used to interlock the rows of mat 100. The cable is preferably stainless steel but may alternatively be made of galvanized stainless steel, or high strength polyester rope. Additionally, the cable or rope should exhibit excellent resistance characteristics to most acids, alkalis, and solvents and should also be impervious to rot, mildew, and microorganisms associated with marine environs. The cable 42 is preferably extended through ducts 40 when the mat 100 is fully formed. For example, a cable 42 may be started at side 25b of a first row and extend through duct 40 for the length of a revetment mat 100. At an opposite end of the mat 100 the cable may emerge from duct 40 at for instance side 25a. At each duct 40, a washer 46 and a sleeve 44 are placed on the cable 42 where it enters and exits the revetment mat 100, as shown in Fig. 9. The sleeves 44 are crimped on the cable 42 adjacent the duct holes 40 so that free movement of the cable 42 through the mattress 100 is inhibited. This process is continued until the mattress 100 is fully constructed.

Once this is completed, a filter medium or filter fabric 200 is placed over the substrate soil where the mattress 100 will be located. The filter fabric 200 inhibits erosion of the substrate soil 210 and is preferably made of a geotextile comprising a synthetic polymer such as propylene, ethylene, ester, or amide and inhibitors to resist deterioration due to ultraviolet and heat. Once the filter fabric 200 is positioned, the mattress 100 is moved by crane or other lifting device, preferably with the aid of a spreader bar, to a position above the filter fabric 200. Finally, the mattress 100 is lowered into the waterway, ramp, or channel and placed on top the filter fabric 200. In the alternative, the mat 100 may be constructed at the construction site instead of at a manufacturing facility. As discussed earlier, the blocks comprising mat 100 may have projections on a lower surface 15 increasing shear force resistance to the moving water.

The foregoing detailed description is given primarily for clearness of understanding and no unnecessary limitations are to be understood therefrom for modifications will become obvious to those skilled in the art upon reading this disclosure and may be made without departing from the spirit of the invention and scope of the appended claims.

CLAIMS

1. A revetment mat, comprising:

at least one first row of standard size blocks;

at least one second row of said standard size blocks having block and one-half size end blocks at the second row ends;

said revetment mat defined by alternating said at least one first and second rows in a running bond and evenly aligned edges.

2. The revetment mat of claim 1, said end blocks including:

two U-shaped recesses within first and second opposed parallel sides;

a third side having three projections;

a fourth side having three U-shaped recesses opposite said three projections of said third side;

said third and fourth sides being opposed parallel sides and each having an upper portion and a lower portion, said upper portion of said third and fourth sides being tapered inwardly;

said third side having ends each defining one-half size U-shaped recesses and said fourth side having ends each defining one-half size projections;

a top surface of said at least one block having a dome with first and second openings extending downwardly therethrough;

a half-dome disposed on said top surface opposite said dome;

wherein two of said U-shaped recesses extend through said half-dome;

said top surface including third and fourth openings extending downwardly and positioned between said dome and said half-dome;

said two U-shaped recesses of said half-dome being sized about one-half of said first and second openings;

said recesses extending through said half-dome being about one-half size of said openings extending through said dome.

3. The revetment mat including of claim 1, said standard size blocks having first and second sides including two recesses, a third size having two projections and a fourth side having two recesses.

4. The revetment mat of claim 6, said standard size blocks and said end blocks further comprising adjacent partially tapered sidewalls.

5. The revetment mat of claim 1 further comprising a cable interconnecting said blocks.

6. The revetment mat of claim 1, said at least one end blocks inhibiting said revetment mat edges from curling up.

7. The revetment mat of claim 1, said mat formed of precast concrete.

8. The revetment mat including at least one block and a half size end block, comprising:

a plurality of alternating first rows of blocks and second rows of blocks forming a mat;

said first row including a plurality of blocks of a first size having first and second sides including two recesses, a third side having two projections and a fourth side having two recesses;

said second row including a right hand block and a half at a right end of said second row and a left hand block and a half at a left end of said second row, and a plurality of standard sized blocks extending between said right hand and left hand blocks;

said first and second rows in a running bond;

said mat having substantially evenly aligned right hand and left hand edges;

said block and a half size blocks being about one and one half times larger than said first size block;

wherein said block and a half size blocks comprises:

two U-shaped recesses within first and second opposed parallel sides;

a third side having two U-shaped recesses defined by projections;

a fourth side having three U-shaped recesses defined by projections;

said third and fourth sides being opposed parallel sides and each having an upper and a lower portion, said upper portions being tapered inwardly;

said third side having ends each defining one-half U-shaped recesses and said fourth side having ends each defining one-half size projections;

a top surface of said block having a dome with first and second openings extending downwardly therethrough;

a half-dome disposed on said top surface opposite said dome;

said half-dome having two of said U-shaped recesses extending there through;

said top surface including third and fourth openings extending downwardly and positioned between said dome and said half-dome;

said recesses of said half-dome being sized about one-half of said first and second openings.

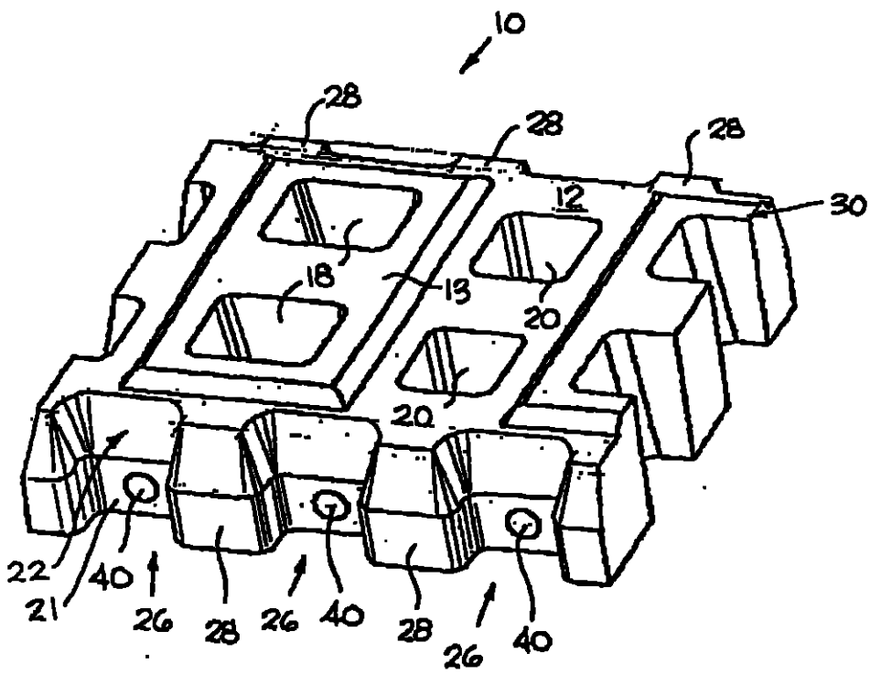
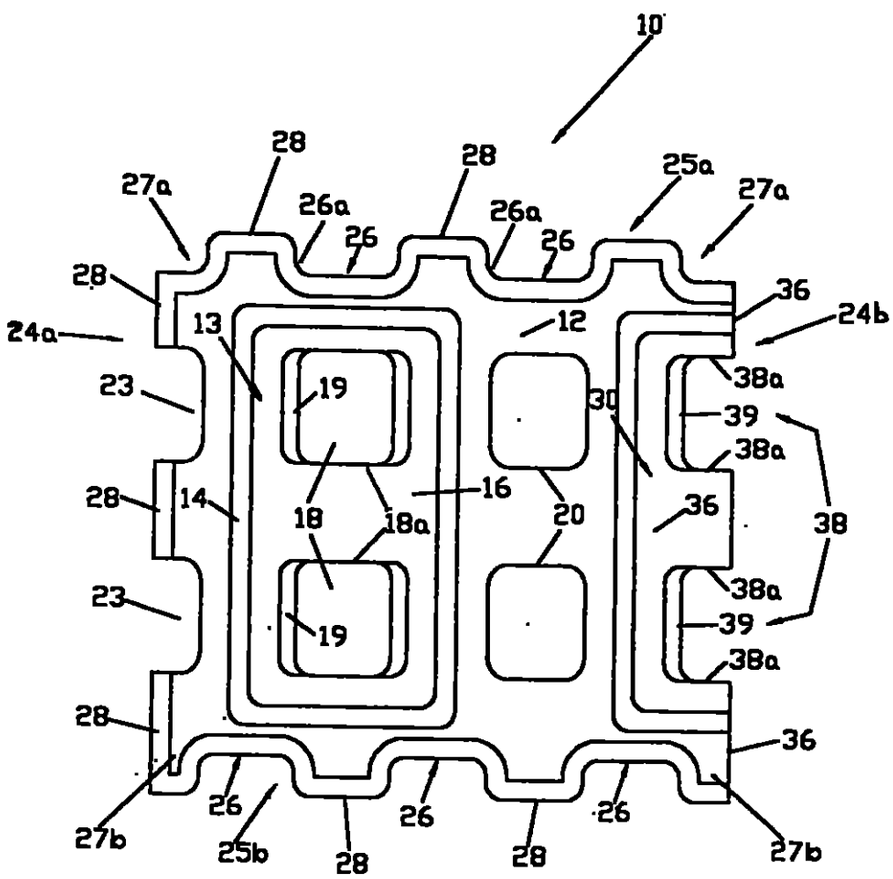


FIG. 1


10
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27a
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24b
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12
38a
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38a
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18
18a
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36
38
23
38a
19
39
38a
28
36
26
26
26
26
27b
25b
28
28
27b
3
3

FIG. 2

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24a
24b
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FIG 3

FIG. 4

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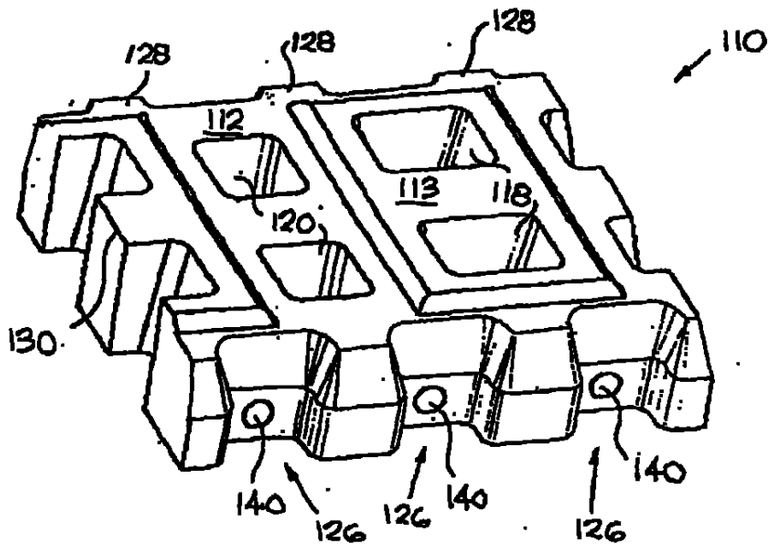

FIG. 5

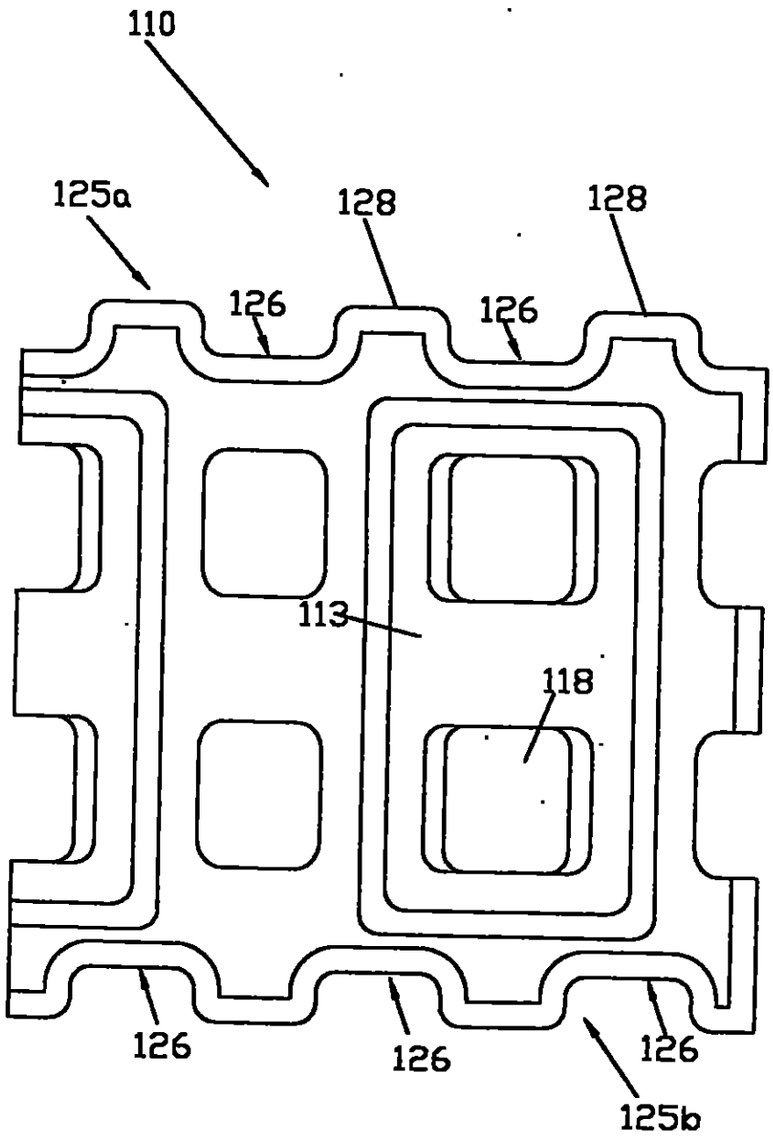

FIG. 6

FIG. 7

FIG 8

FIG 9

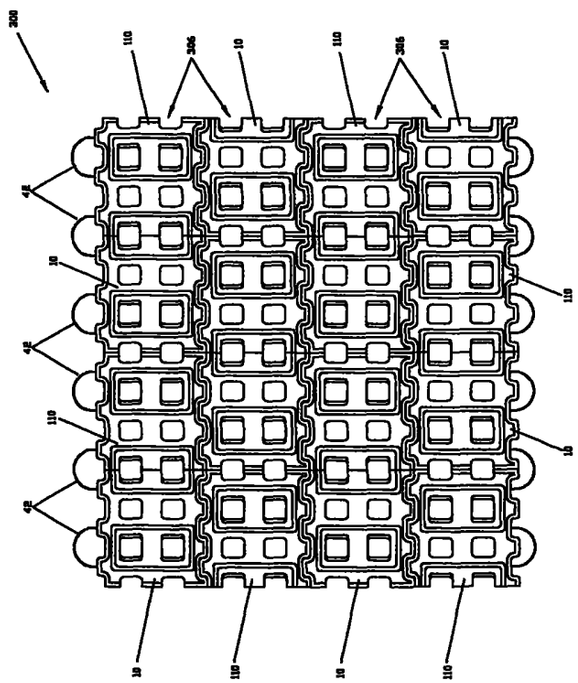

FIG 10

PATENT COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference ARMORFLEX	FOR FURTHER ACTION	see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below.
International application No. PCT/US03/00776	International filing date (*day/month/year*) 10 January 2003 (10.01.2003)	(Earliest) Priority Date (*day/month/year*) 10 January 2002 (10.01.2002)
Applicant LEE MASONRY PRODUCTS, LLC		

This international search report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This international search report consists of a total of 12 sheets.

☒ It is also accompanied by a copy of each prior art document cited in this report.

1. Basis of the Report
   a. With regard to the language, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.
   ☐ the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).
   b. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international search was carried out on the basis of the sequence listing:
   ☐ contained in the international application in written form.
   ☐ filed together with the international application in computer readable form.
   ☐ furnished subsequently to this Authority in written form.
   ☐ furnished subsequently to this Authority in computer readable form.
   ☐ the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
   ☐ the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.
2. ☐ Certain claims were found unsearchable (See Box I).
3. ☐ Unity of invention is lacking (See Box II).
4. With regard to the title,
   ☒ the text is approved as submitted by the applicant.
   ☐ the text has been established by this Authority to read as follows:
5. With regard to the abstract,
   ☐ the text is approved as submitted by the applicant.
   ☒ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.
6. The figure of the drawings to be published with the abstract is Figure No. 1
   ☒ as suggested by the applicant. ☐ None of the figures
   ☐ because the applicant failed to suggest a figure.
   ☐ because this figure better characterizes the invention.

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INTERNATIONAL SEARCH REPORT

International application No.

PCT/US03/00776

Box III TEXT OF THE ABSTRACT (Continuation of Item 5 of the first sheet)

The technical features mentioned in the abstract do not include a reference sign between parentheses (PCT Rule 8.1(d)).

NEW ABSTRACT

A revetment mat (100) formed of revetment blocks having a size of about one and a half times larger (10, 110) than standard sized blocks (104) and made of precast concrete. The one and one-half size revetment blocks (10, 110) are used as end blocks in alternating rows. The end block preferabley has four side walls having a plurality of projections (28) and recesses (26) for interlocking with adjacent revetment blocks. When used to form the revetment mat (100), the mat has evenly aligned edges and resists upward lift and turning associated with half blocks of the prior art.

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US03/00776

A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) : B02B 3/14
US CL : 405/16, 18, 33; 52/590.2, 592.1, 603, 604, 606; 404/38, 40, 41

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
U.S. : Please See Continuation Sheet

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 4,370,075 A (SCALES) 25 January 1983 (25.01.1983), col.4, lines 23-68; col.5, line 1-67; col.6, lines 1-56.	1 and 3-7
A	US 6,050,044 A (McINTOSH) 18 April 2000 (18.04.2000), entire document.	8
A	US 4,182,089 A (COOK) 08 January 1980 (08.01.1980), entire document.	1
A	US 6,508,607 A (SMITH et al) 21 January 2003 (21.01.2003), entire document.	1-8

☐ Further documents are listed in the continuation of Box C. ☐ See patent family annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
19 April 2003 (19.04.2003)	27 FEB 2004
Name and mailing address of the ISA/US Commissioner of Patents and Trademarks Box PCT Washington, D.C. 20231 Facsimile No. (703)305-3230	Authorized officer Gregory (James) Lee Telephone No. (703) 308-6777

Form PCT/ISA/210 (second sheet) (July 1998)

INTERNATIONAL SEARCH REPORT

PCT/US03/00776

Continuation of B. FIELDS SEARCHED Item 1:
405/ 15, 16, 17, 18, 21, 22, 33; 52/590.2, 592.1, 596, 603, 604, 606, 608, 609; 404/34, 37, 38, 39, 40, 41; D25/112, 113, 114, 115, 116, 118; D21/484, 489, 491, 492, 500, 501, 503, 504, 505

The letter must indicate the differences between the claims as filed and the claims as amended. It must, in particular, indicate, in connection with each claim appearing in the international application (it being understood that identical indications concerning several claims may be grouped), whether

(i) the claim is unchanged;

(ii) the claim is cancelled;

(iii) the claim is new;

(iv) the claim replaces one or more claims as filed;

(v) the claim is the result of the division of a claim as filed.

The following examples illustrate the manner in which amendments must be explained in the accompanying letter:

1. [Where originally there were 48 claims and after amendment of some claims there are 51]:
"Claims 1 to 29, 31, 32, 34, 35, 37 to 48 replaced by amended claims bearing the same numbers; claims 30, 33 and 36 unchanged; new claims 49 to 51 added."

2. [Where originally there were 15 claims and after amendment of all claims there are 11]:
"Claims 1 to 15 replaced by amended claims 1 to 11."

3. [Where originally there were 14 claims and the amendments consist in cancelling some claims and in adding new claims]:
"Claims 1 to 6 and 14 unchanged; claims 7 to 13 cancelled; new claims 15, 16 and 17 added." or
"Claims 7 to 13 cancelled; new claims 15, 16 and 17 added; all other claims unchanged."

4. [Where various kinds of amendments are made]:
"Claims 1-10 unchanged; claims 11 to 13, 18 and 19 cancelled; claims 14, 15 and 16 replaced by amended claim 14; claim 17 subdivided into amended claims 15, 16 and 17; new claims 20 and 21 added."

"Statement under Article 19(1)" (Rule 46.4)

The amendments may be accompanied by a statement explaining the amendments and indicating any impact that such amendments might have on the description and the drawings (which cannot be amended under Article 19(1)).

The statement will be published with the international application and the amended claims.

It must be in the language in which the international application is to be published.

It must be brief, not exceeding 500 words if in English or if translated into English.

It should not be confused with and does not replace the letter indicating the differences between the claims as filed and as amended. It must be filed on a separate sheet and must be identified as such by a heading, preferably by using the words "Statement under Article 19(1)."

It may not contain any disparaging comments on the international search report or the relevance of citations contained in that report. Reference to citations, relevant to a given claim, contained in the international search report may be made only in connection with an amendment of that claim.

Consequence if a demand for international preliminary examination has already been filed

If, at the time of filing any amendments and any accompanying statement, under Article 19, a demand for international preliminary examination has already been submitted, the applicant must preferably, at the time of filing the amendments (and any statement) with the International Bureau, also file with the International Preliminary Examining Authority a copy of such amendments (and of any statement) and, where required, a translation of such amendments for the procedure before that Authority (see Rules 55.3(a) and 62.2, first sentence). For further information, see the Notes to the demand form (PCT/IPEA/401).

Consequence with regard to translation of the international application for entry into the national phase

The applicant's attention is drawn to the fact that, upon entry into the national phase, a translation of the claims as amended under Article 19 may have to be furnished to the designated/elected Offices, instead of, or in addition to, the translation of the claims as filed.

For further details on the requirements of each designated/elected Office, see the *PCT Applicant's Guide*, Volume II.

NOTES TO FORM PCT/ISA/220

These Notes are intended to give the basic instructions concerning the filing of amendments under Article 19. The Notes are based on the requirements of the Patent Cooperation Treaty, the Regulations and the Administrative Instructions under that Treaty. In case of discrepancy between these Notes and those requirements, the latter are applicable. For more detailed information, see also the *PCT Applicant's Guide*, a publication of WIPO.

In these Notes, "Article," "Rule" and "Section" refer to the provisions of the PCT, the PCT Regulations and the PCT Administrative Instructions, respectively.

INSTRUCTIONS CONCERNING AMENDMENTS UNDER ARTICLE 19

The applicant has, after having received the international search report, one opportunity to amend the claims of the international application. It should however be emphasized that, since all parts of the international application (claims, description and drawings) may be amended during the international preliminary examination procedure, there is usually no need to file amendments of the claims under Article 19 except where, e.g. the applicant wants the latter to be published for the purposes of provisional protection or has another reason for amending the claims before international publication. Furthermore, it should be emphasized that provisional protection is available in some States only.

What parts of the international application may be amended ?

Under Article 19, only the claims may be amended.

During the international phase, the claims may also be amended (or further amended) under Article 34 before the International Preliminary Examining Authority. The description and drawings may only be amended under Article 34 before the International Preliminary Examining Authority.

Upon entry into the national phase, all parts of the international application may be amended under Article 28 or, where applicable, Article 41.

When ? Within 2 months from the date of transmittal of the international search report or 16 months from the priority date, whichever time limit expires later. It should be noted, however, that the amendments will be considered as having been received on time if they are received by the International Bureau after the expiration of the applicable time limit but before the completion of the technical preparations for international publication (Rule 46.1).

Where not to file the amendments ?

The amendments may only be filed with the International Bureau and not with the receiving Office or the International Searching Authority (Rule 46.2).

Where a demand for international preliminary examination has been/is filed, see below.

How ? Either by cancelling one or more entire claims, by adding one or more new claims or by amending the text of one or more of the claims as filed.

A replacement sheet must be submitted for each sheet of the claims which, on account of an amendment or amendments, differs from the sheet originally filed.

All the claims appearing on a replacement sheet must be numbered in Arabic numerals. Where a claim is cancelled, no renumbering of the other claims is required. In all cases where claims are renumbered, they must be renumbered consecutively (Administrative Instructions, Section 205(b)).

The amendments must be made in the language in which the international application is to be published.

What documents must/may accompany the amendments ?

Letter (Section 205(b)):

The amendments must be submitted with a letter.

The letter will not be published with the international application and the amended claims. It should not be confused with the "Statement under Article 19(1)" (see below, under "Statement under Article 19(1)").

The letter must be in English or French, at the choice of the applicant. However, if the language of the international application is English, the letter must be in English; if the language of the international application is French, the letter must be in French.

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Tramite 011 PCT-PATENT 370 FASE NACI 411 PRESENTAC
Dependencia: 2020 DIVISION DE NUEVAS CREACIONES

REQUISITOS NECESARIOS PARA PRESENTACION Y AGILIZACION DEL TRAMITE

	USUARIO	RADICADOR
PATENTE DE INVENCIÓN ✓ MODELO DE UTILIDAD	( )	(✓)
Indicación de que se solicita la concesión de una patente	( )	(✓)
Datos de identificación del solicitante o de la persona que se presenta la solicitud.	( )	(✓)
Descripción de la invención.	( )	(✓)
Dibujos de ser estos pertinentes.	( )	(✓)
Comprobante de Pago de las tasas establecidas		
COMPLETA ( ) INCOMPLETA	( )	( )
DISEÑO INDUSTRIAL ( )		
- Indicación de que se solicita el registro de Diseño Industrial	( )	( )
- Datos de identificación del solicitante o de la persona que presenta la solicitud	( )	( )
- Representación gráfica o fotográfica del Diseño Industrial o muestra del Material que incorpora el diseño	( )	( )
Comprobante de pago de las tasas establecidas	( )	( )
COMPLETA ( ) INCOMPLETA	( )	( )
ESQUEMA DE TRAZADO ( )		
- Indicación de que solicita el registro de un Esquema de trazado	( )	( )
- Datos de identificación del solicitante o de la persona que presenta La solicitud	( )	( )
Representación gráfica del esquema de trazado	( )	( )
Comprobante de pago de las tasas establecidas	( )	( )
COMPLETA ( ) INCOMPLETA	( )	( )

Firma Responsable Claudia M Neva

Fecha

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Bogotá D C

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Doctor(a)
DARIO CARDENAS NAVAS
Apoderado

Oficio N°

ASUNTO:

Radicación N	04-77531
Solicitud internacional	PCT/US03/00776
Fecha inicio fase nacional	10/08/2004
Trámite	011
Evento	379
Actuación	416
Folios	001

Como resultado del examen de forma, realizado con fundamento en el artículo 38 de la Decisión 486 de la Comisión de la Comunidad Andina, artículo 27 del Tratado de Cooperación en Materia de Patentes (PCT), regla 51 bis del Reglamento y Circular Única de la Superintendencia de Industria y Comercio, se le comunica que:

- La solicitud no contiene copia del documento en que consta la cesión del derecho de patente del inventor al solicitante o a su causante (Art. 26-k) Decisión 486).

En cumplimiento de lo dispuesto por el artículo 39 de la Decisión 486, se le requiere para que dentro del término de dos meses siguientes a la fecha de notificación del presente oficio, complete los requisitos anteriormente enunciados. En caso de no dar cumplimiento al presente requerimiento, la solicitud se considerará abandonada y perderá su prelación.

Notifíquese el presente oficio conforme a lo dispuesto en el numeral 5.2, literal e), del capítulo quinto del título primero de la Circular Única N° 10 de 2001.

ALIX CARMENZA CESPEDES DE VERGEL
Jefe de la División de Nuevas Creaciones.

El anterior requerimiento fue notificado por fijación en lista de fecha,

30 SET. 2004

202051

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