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- (71) Applicant (for all designated States except US):  
REXNORD FLATTOP EUROPE B.V. [NL/NL];  
Einsteinstraat 1, NL-2691 GV 's-gravenzande (NL).
- (72) Inventors; and
- (75) Inventors/Applicants (for US only): CORNELISSEN,  
Leonardus Adrianus Catharinus [NL/NL]; Govert  
Bidloostraat 106, NL-2563 XJ 's-gravenzande (NL).  
SIGMOND, Ronald [NL/NL]; Korte Singelstraat 17A,  
NL-3112 GA Schiedam (NL).
- (74) Agent: HATZMANN, M.J.; Vereenigde, Johan de Witt-  
laan 7, NL-2517 JR Den Haag (NL).
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(54) Title: MODULE FOR A CONVEYOR MAT AND MODULAR CONVEYOR MAT

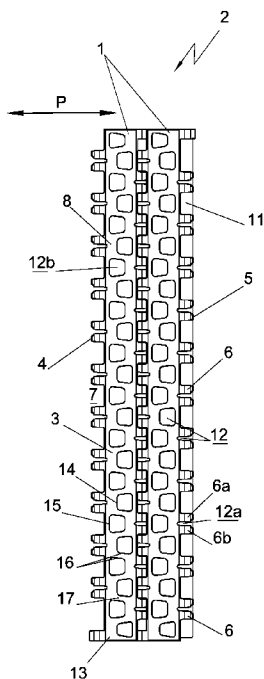


Fig.1

(57) Abstract: A module for a conveyor mat (1), comprising a body part which is provided on front and rear sides extending transversely to a conveying direction with rows of hinge loops (6), spaced apart with mutual interspaces transversely to the conveying direction, having hinge holes (9) extending transversely to the conveying direction, such that front and rear sides of successive modules are culplable, upon interdigitation of the hinge loops, with the aid of a hinge pin extending transversely to the conveying direction, so that top surfaces of the coupled modules form a conveying surface, wherein the top surface of the modules is open worked with passage openings extending from the top surface as far as an under surface of the module. The passage openings comprise notches (12a) in the hinge loops, extending in conveying direction.

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Title: Module for a conveyor mat and modular conveyor mat

The invention relates to a module for a conveyor mat, comprising a body part which is provided on front and rear sides extending transversely to a conveying direction with rows of hinge loops, spaced apart with mutual interspaces transversely to the conveying direction, having hinge holes  
5 extending transversely to the conveying direction, such that front and rear sides of successive modules are couplable, upon interdigitation of the hinge loops, with the aid of a hinge pin extending transversely to the conveying direction, so that top surfaces of the coupled modules form a conveying surface, wherein the top surface of the module is openworked with passage openings  
10 extending from the top surface as far as an undersurface of the module.

Such a module is generally known and is utilized in modular conveyor mats for conveying all sorts of products.

For certain uses, such as, for instance, washers, coolers and dryers, efforts are directed towards providing openwork in the top surface. In practice,  
15 providing as much openwork as possible in a module is difficult, as the openwork in the top surface of the module can reduce the rigidity and strength of the modules to below a desired minimum value. Further, openwork in the top surface can lead to a reduction of the functionality of the module in that, for instance, the laying pattern of the modules in the mat becomes more  
20 complex or in that the cooperation with drive wheels is hindered.

In order to enhance the design choice when providing openwork, the invention contemplates a further possibility of openwork. To that end, a mat module according to the invention is characterized in that the passage openings comprise notches in the hinge loops, extending in conveying  
25 direction. By providing notches in the hinge loops as passage openings, the rigidity and strength of the module are generally relatively little influenced while the pass-through capacity of the top surface can be relatively well enhanced. Further, such notches have little if any adverse effect on the laying

pattern or the possibilities for driving the mat. They also contribute to a better cleanability of the hinge pin and the hinge loops.

When, within the context, mention is made of a notch in the hinge loop, this is understood to mean a through recess transverse to the conveying surface T.

The invention also relates to a modular conveyor mat.

Further advantageous embodiments of the invention are represented in the subclaims and will be elucidated on the basis of an exemplary embodiment represented in the drawing. In the drawing:

Fig. 1 shows a schematic top plan view of a part of a conveyor mat;

Fig. 2 shows a schematic perspective view of a larger part of the conveyor mat of Fig. 1.

It is noted that the Figures are only schematic representations of the preferred embodiment of the invention which is described by way of non-limitative exemplary embodiment. In the Figures, identical or corresponding parts are represented with the same reference numerals.

With reference to Figs. 1 and 2, a module 1 is shown therein which is included in a part of a modular conveyor mat 2. The module comprises a body part 3 which is provided, on a front side 4 and rear side 5 extending during use transversely to a conveying direction indicated with a double arrow P, with rows of hinge loops 6. The hinge loops 6 are spaced apart with mutual interspaces transversely to the conveying direction P. The hinge loops 4 on the front side 4 of the body part are staggered transversely to the conveying direction with respect to the hinge loops 6 on the rear side 5 of the body part 3. The hinge loops 6 are provided with hinge holes 9 extending transversely to the conveying direction P. The front side 4 and the rear side 5 of modules 1 in the conveyor mat 2 successive in conveying direction P are coupled with the aid of hinge pins 11 extending transversely to the conveying direction P.

Top surfaces 8 of the coupled modules 1 form a conveying surface 2 on which products can be arranged. The top surface of the module 1 is

openworked with passage openings 12. Passage openings 12 extend from the top surface 8 of the module 1 as far as the undersurface 10 of the module 1.

The passage openings 12 comprise notches 12a in the hinge loops 6, extending in conveying direction P. In each case, the notches 12a divide a  
5 hinge loop into two hinge loop parts 6a, 6b. The notches 12a extend from the front or rear side of the module 1, respectively, beyond the hinge loop 9.

In the exemplary embodiment, with the exception of the hinge loops on a longitudinal edge 13, all hinge loops are provided with notches 12a. In this example, the hinge loops 6 on the longitudinal edge are designed as  
10 closing loops which secure the hinge pin 11 against migration transversely to the conveying direction P.

The notches 12a contribute in a positive manner to the pass through capacity of the mat transversely to the conveying surface 2, and provide no relevant weakening in the total construction. Nor do the notches 12a in the  
15 hinge loops 6 adversely influence the possibilities for driving the conveyor mat 2. The notch has a width transversely to the conveying direction between the hinge loop parts 6a, 6b that is preferably smaller than the width of a hinge loop part, more preferably less than half a hinge loop part.

The module 1 is further openworked with the aid of passage  
20 openings 12 which are designed as substantially trapezoidal recesses in the body part 3. The trapezoidal recesses 12b are also designed as through recesses and extend from the top surface 8 as far as the undersurface 10 of the module 1. The trapezoidal recesses 12b are provided with rounded-off corners. Short straight sides 14 of the trapezoidal recesses 12b are contiguous to the  
25 hinge loops 6, while long straight sides 15 of the trapezoidal recesses 12b are contiguous to an intermediate space 7 between hinge loops 6. Transversely to the conveying direction, a number of trapezoidal recesses 12b lie next to each other with alternating orientation. Between oblique sides 16, adjacent trapezoidal recesses 12 form a rib 17 extending between two hinge loop  
30 parts 6a, 6b. Via the rib 17, the tensile force can be transmitted from a hinge

loop part 6a at the front side 4 of the body part 3 to a hinge loop part 6b at the rear side of the body part 3. Thus, in the exemplary embodiment, a conveying mat 2 is obtained whose conveying surface T has an open surface of approximately 40%, while the mat is sufficiently rigid and strong to withstand a relevant tensile load.

The invention is not limited to the represented exemplary embodiment. Many variants are possible. Several modules may be arranged transversely to the conveying direction and the successive modules of the mat can be coupled to form an endless loop. Further, the modules successive in conveying direction can be staggered with respect to each other transversely to the conveying direction so that the modules are included in the mat according to a brick pattern. Further, several sorts of modules can be included in the mat, for instance modules having a different length transversely to the conveying direction, but also modules having a mutually different basic form. Also, the structure of the module can strongly deviate from the structure represented here, and the structure can even be locally different within a module. In particular, the hinge loops need not necessarily cooperate as interlocking fingers according to an ABABA pattern, but the pattern can also be irregular and/or disrupted. Such variants will be directly clear to the skilled person and are understood to fall within the reach of the invention as represented in the following claims.

Claims

1. A module for a conveyor mat, comprising a body part which is provided on front and rear sides extending transversely to a conveying direction with rows of hinge loops, spaced apart with mutual interspaces transversely to the conveying direction, having hinge holes extending  
5 transversely to the conveying direction, such that front and rear sides of successive modules are couplable, upon interdigitation of the hinge loops, with the aid of a hinge pin extending transversely to the conveying direction, so that top surfaces of the coupled modules form a conveying surface, wherein the top surface of the module is openworked with passage openings extending from the  
10 top surface as far as an undersurface of the module, **characterized in that** the passage openings comprise notches in the hinge loops, extending in conveying direction.
2. A module according to claim 1, wherein notches in each case divide a hinge loop into two hinge loop parts.
- 15 3 A module according to claim 1 or 2, wherein notches extend from a front or rear side of the module, respectively, beyond the hinge hole of the hinge loop.
4. A module according to any one of the preceding claims, wherein the passage openings further comprise substantially trapezoidal recesses in the  
20 body part.
5. A module according to claim 4, wherein the hinge loops at the front and rear sides of the body part are staggered with respect to each other and wherein short straight sides of substantially trapezoidal recesses are contiguous to a hinge loop and long straight sides of substantially trapezoidal  
25 recesses are contiguous to an intermediate space between hinge loops.
6. A module according to claim 5, wherein transversely to the conveying direction, a number of trapezoidal recesses are arranged one next to

the other, so that between oblique sides of adjacent trapezoidal recesses, ribs are formed extending between two hinge loop parts.

7. A modular conveyor mat, comprising a number of modules successive in conveying direction, each provided with a body part extending  
5 transversely to a conveying direction having hinge loops reaching forward and rearward in conveying direction, wherein the hinge loops of successive modules cooperate and are coupled with the aid of hinge pins, and wherein at least two successive modules are designed according to any one of the preceding claims.

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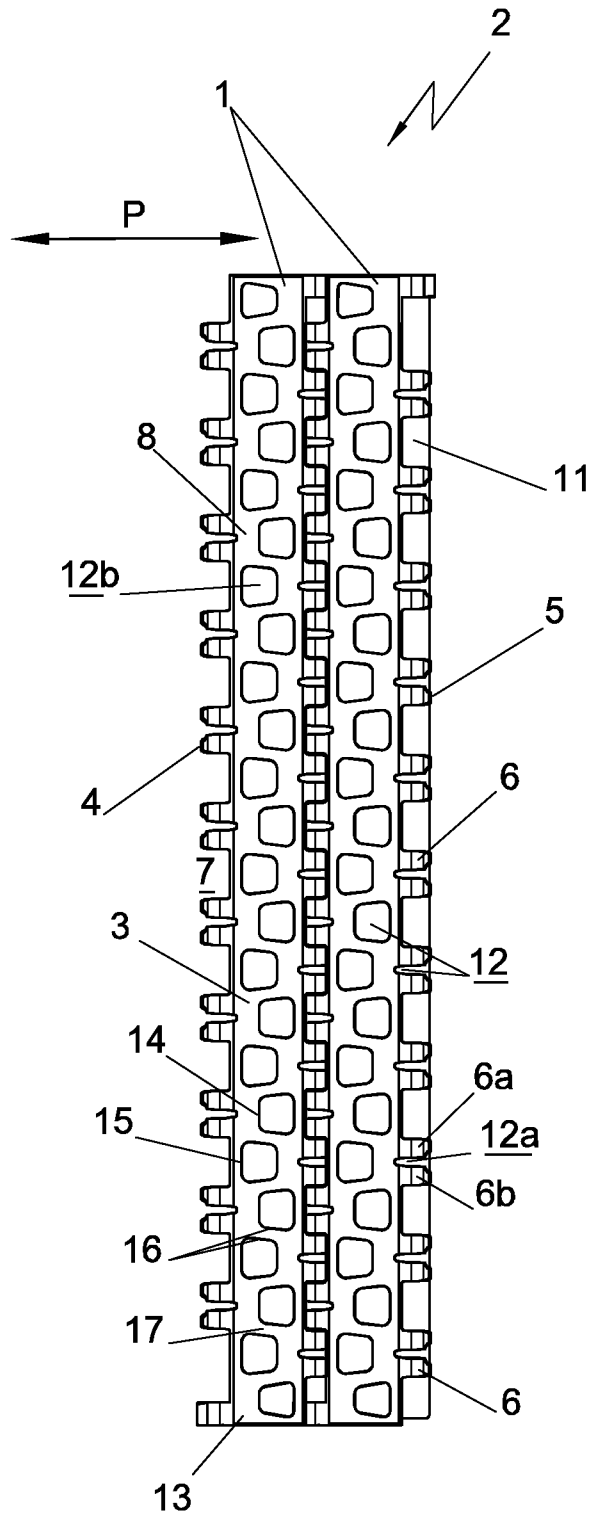


Fig.1

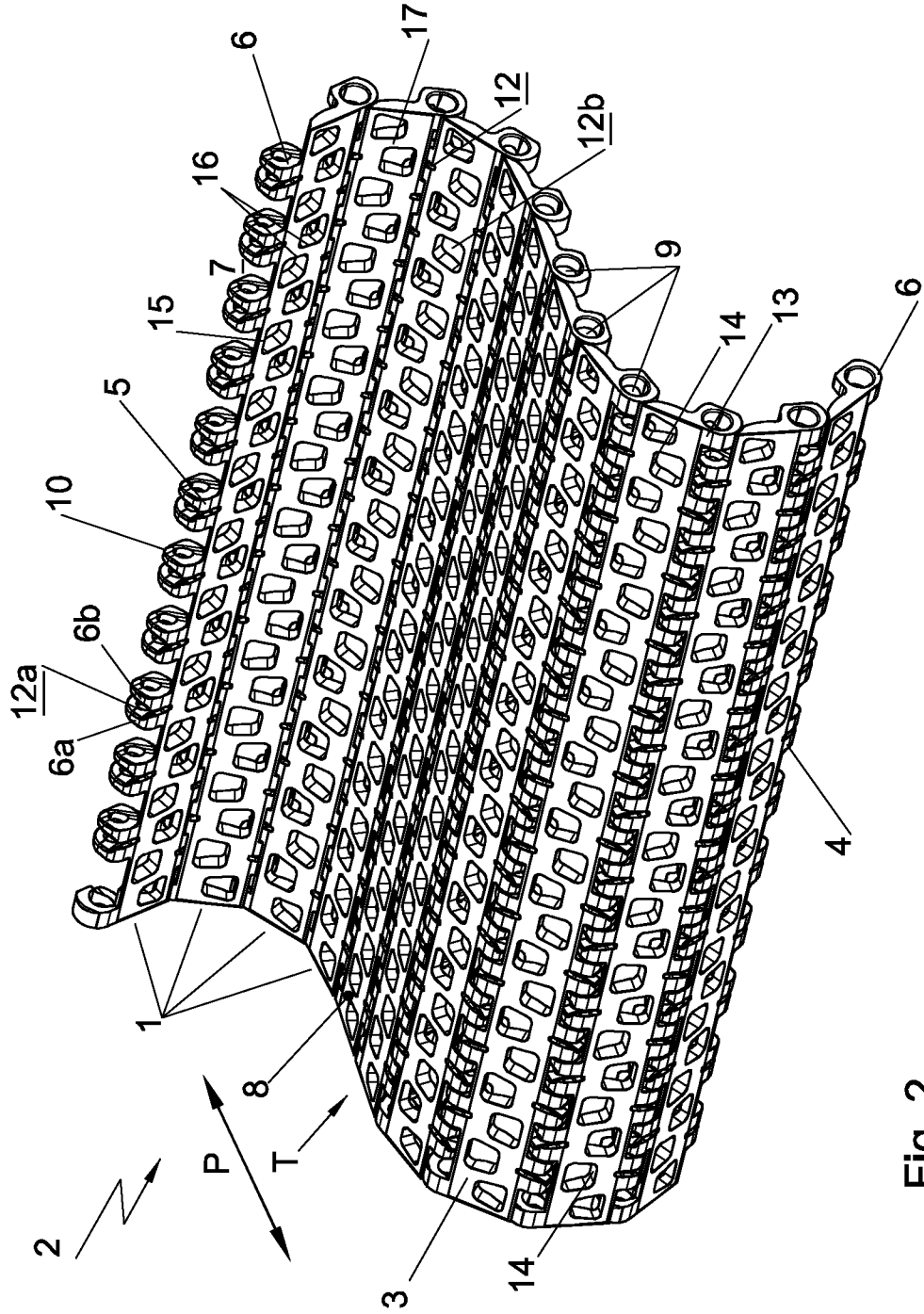


Fig. 2

## INTERNATIONAL SEARCH REPORT

International application No

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A. CLASSIFICATION OF SUBJECT MATTER  
INV. B65G17/08

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)  
B65G

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 practical, search terms used)

EPO-Internal

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 2007/181408 A1 (SCHOEPF ALEX [CH]) 9 August 2007 (2007-08-09) figure 4	1
A	EP 0 930 247 A (MCC NEDERLAND [NL]) 21 July 1999 (1999-07-21) figure 3	1
A	WO 2007/067047 A (REXNORD FLATTOP EUROP B V [NL]; MENKE CORNELIS HENDRIK MIJNDER [NL]; V) 14 June 2007 (2007-06-14)	1
A	WO 2005/110897 A (REXNORD FLATTOP EUROP B V [NL]; MENKE CORNELIS HENDRIK MYNDERT [NL]; V) 24 November 2005 (2005-11-24)	1

Further documents are listed in the continuation of Box C.

See patent family annex.

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\*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

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\*&\* document member of the same patent family

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European Patent Office, P.B. 5818 Patentlaan 2  
NL - 2280 HV Rijswijk  
Tel. (+31-70) 340-2040,  
Fax: (+31-70) 340-3016

Authorized officer

Roberts, Peter

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Information on patent family members

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