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(71)(72) Applicant and Inventor: ANDERSSON, Dan, Christer [SE/SE]; Bergkristallvägen 48, S-421 51 Västra Frölunda (SE).

(74) Agents: ROTH, Michel et al.; Göteborgs Patentbyrå AB, Box 5005, S-402 21 Göteborg (SE).

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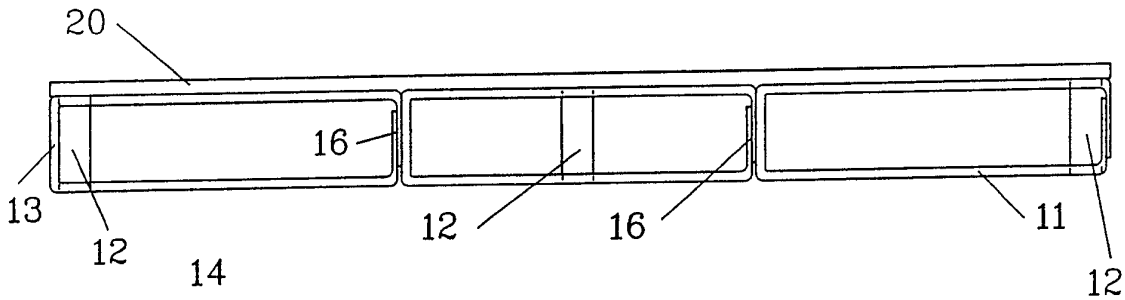

(57) Abstract

Light weight pallet, especially a disposable pallet, of the kind comprising a number of supporting elements and a covering disc (20) connected thereto. The supporting elements consist of profiled plate strips (17), formed to rectangular frames (11, 12), several of them being connected to each other at the short ends forming an oblong string of frames. The frames (11) are of two different kinds, one being insertable in the other and fixable in positions transversely to each other. One type of frames (12) is at both short ends designed with a tapered end portion (19) fitting into the frame of the other type (11), and that parts of a frame of the other type are placed about the tapered end portions (19) of two adjacent frames in a string.

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LIGHT WEIGHT PALLET

The present invention refers to a light weight pallet of the kind comprising a number of supporting element and a covering disc connected thereto.

Background of the invention

It is required, particularly for disposable pallets, that they are light, i.e. have low weight, are inexpensive to manufacture and can be scrapped after use for recovery of materials used.

From EP A 0026009 it is earlier known to form supporting elements of pallets from metal profiles, which have been bent and interconnected to rectangular frames. These are arranged in parallel and at a distance from each other and they are interconnected by boards or the like provided on the upper and/or lower side of the pallet. As the metal profiles are constituted by tubes the structure will certainly be rather strong, but also expensive to manufacture. It is not suited as a disposable pallet.

Another type of pallet is known from SU A 967 876, which also refers to rectangular supporting elements, but which are present in two different embodiments, which are insertable into each other for forming the pallet. This however is not manufactured from plate strips but from extrudeable material.

The pallet known from WO 87/04684 incorporates supporting elements in form of rectangular frames, wherein each separate frame is composed by a plurality of plate strips bent to U-shape. The manufacture is rather work intensive as the frames can not be pre-manufactured, as they like chain links engage into each other, and can not be welded together at a large number of connecting positions until after the "linking".

A further development of the load carrier shown in the PCT application is described in SE A 8700119-4, where each supporting element is formed by open rectangular frames. The very pallet is

provided in a basic embodiment, a so called quarter-pallet, and if a normal or full pallet is desired four such quarter-pallets are combined to a unit. This means that the pallet will be oversized, as the portions adjoining each other will be doubled. The pallet therefor is possible as a light weight pallet or disposable pallet only in its basic embodiment.

The purpose of the invention

The purpose of the invention is to provide a disposable light weight pallet of the type mentioned in the introduction, which has a simple design and is easily manufactured, which is suited for automatized manufacture, e.g. from cheap surplus material, which has low weight with maintained standard requirements regarding strength and which after use can be scrapped and be reused as raw material. This tasks have been solved by the features defined in claim 1.

Description of the drawings

Fig. 1 shows in a bottom view a pallet according to the invention.

Fig. 2 shows one long side of the pallet according to Fig. 1.

Fig. 3 shows one short side of the pallet according to Fig. 1 and 2.

Fig. 4 shows a side view of a first supporting element forming part of the pallet.

Fig. 5 shows the supporting element according to Fig. 4 in a view from above.

Fig. 6 is a section along line VI-VI in Fig. 4.

Fig. 7 is a section along line VII-VII in Fig. 4.

Fig. 8 shows a side view of a second supporting element according to the invention.

Fig. 9 shows the supporting element according to Fig. 8 in a view from above.

Fig. 10 shows a section through a modified supporting element according to the invention.

Fig. 11 shows a modified pallet in a view analogous with Fig. 3.

Description of embodiments

The pallet according to the invention consists of a number of supporting elements of two different types 11 and 12, which are both in form of rectangular frames made from profiled plate strips 17. The strips overlap each other at one short side and in this overlapping 16 the strips are interconnected, e.g. by means of spot welding joints. The very pallet is built according to a module system, and may in one embodiment, shown in Fig. 1 and 2, incorporate three frames 11, which with one or two short sides 13 are facing each other and are connected to each other, e.g by spot welding joints, forming a string 14. Three such strings 14 consisting each of three supporting elements are arranged at a distance from each other and mainly in parallel with each other, and they are interconnected by lateral strings 15, which are composed by two rectangular frames 12 of the same form and size as the frames 11, but with the difference that the end portions of the frames 12, i.e. the portions about the short ends are bent down thus that these portions can project into the space between the long sides of a frame 11.

The frames 11 and 12 are manufactured from plate strips 17, which are roll shaped to the cross section shown in Fig. 6 and 7 resp. The plate strips at their longitudinal edges are provided with a loop-formed bend 18, which gives the plate strip a good flexural rigidity, whereas the parts of the end portions 16 of the plate strips, that overlap each other and which form the joint position, in a manner similar to the portions 19 at the end portions of the frames 12, are provided with rolled down portions, i.e. the side edges of the plate strips are designed with a fold instead of with loops such as shown in Fig. 6.

In the embodiment according to Fig. 1 and 2 the frames 12 with their pressed down end portions 19 thus are inserted into the frames 11 and by means of spot welding connected to these, thus that it is formed a frame structure forming the outer border of the pallet, and which in the middle is interconnected by a cross, likewise constituted by frame elements 11 and 12. On this frame

structure, at least on one of its sides, e.g. the upper side, is provided a covering disc 20, e.g. a fibreboard, a laminated disc or the like, which e.g. by means of pop rivets is connected to the frame structure.

In order to provide a still more rigid structure the plate strips may be formed with one or more additional grooves or the like in correspondence with what is shown in Fig. 10.

Some fork trucks have their forks supported, which means that the pallet must have downwardly open recesses for the forks. In the embodiment shown in Fig. 11 one long side of the frames 11 and/or 12 is/are designed with a portion 21 bent upward to U-shape, the intermediate part 22 of which between the shanks 23 engaging the other long side of the frame. The two long sides thus brought to engagement against each other may possibly be connected to each other by means of spot welding joints or the like.

According to the invention the light weight pallet is composed by two different types of frames 11, 12, where one of the frame types at both the short ends is designed with tapering end portions 19, which fit into the frame of the other type. This new construction causes that the string of frames extending through the middle of the pallet may be located above the joint formed by two lateral frames 12 located adjacent each other, which on one hand facilitates the manufacture (a plurality of welding operations may be made simultaneously) at the same time as only one supporting element need to be used instead of double supporting elements as earlier. Another advantage with the tapering end portions at one type of the frames 12 is, that the upper edge of the upper and lower sides of the pallet is situated in the same plane and may take up the load from the covering disc 20, which results in a better weight distribution. At the embodiment according to the known pallets the longitudinal frames are situated at another level than the lateral frames.

Manufacture of the pallet according to the invention may easily be automatized and the pallet due to its particular construction

and the absolute minimized material consumption is a light weight pallet, which can be manufactured at a very low cost and therefor can be used as a disposable pallet if desired.

CLAIMS

1. A light weight pallet, especially a disposable pallet, of the kind comprising a number of supporting elements and a covering disc (20) connected thereto, which supporting elements consist of profiled plate strips (17), formed to rectangular frames (11,12), several of them being connected to each other at the short ends forming an oblong string of frames, whereby the frames (11) are of two different kinds, one being insertable into the other and fixable in positions transversly to each other,
c h a r a c t e r i z e d t h e r e i n,
that one of the types of frames (12) at both short ends is designed with a tapered end portion (19) fitting into the frame of the other type (11), and
that parts of a frame of the other type are placed about the tapered end portions (19) of two adjacent frames in a string.

2. A light weight pallet as claimed in claim 1,
c h a r a c t e r i z e d t h e r e i n,
that the tapered end portion (19) is formed in that the profiling of the plate strip at these positions is at least partly flattened.

3. A light weight pallet as claimed in claim 1,
c h a r a c t e r i z e d t h e r e i n,
that the profiled plate strips (17) are provided with bent portions along the side edges.

4. A light weight pallet as claimed in claim 1,
c h a r a c t e r i z e d t h e r e i n,
that one of the long sides at least of one type of frames (11 and/or 12) is designed with a U-shaped bent up portion (21), the intermediate portion (22) of which between the shanks (23) of the U is brought to engagement against the inner side of one long side of the frame.

FIG. 1

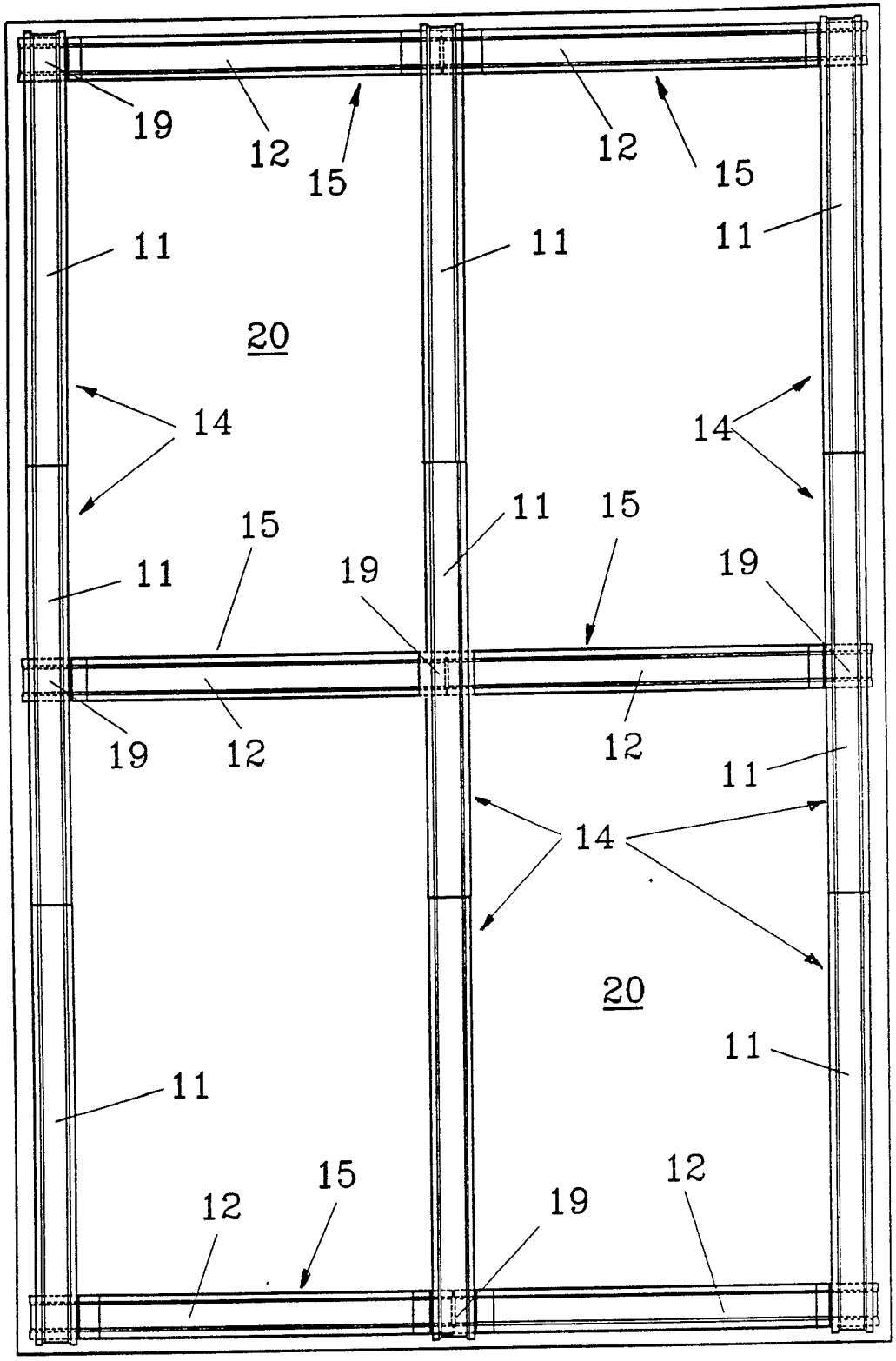
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FIG. 4

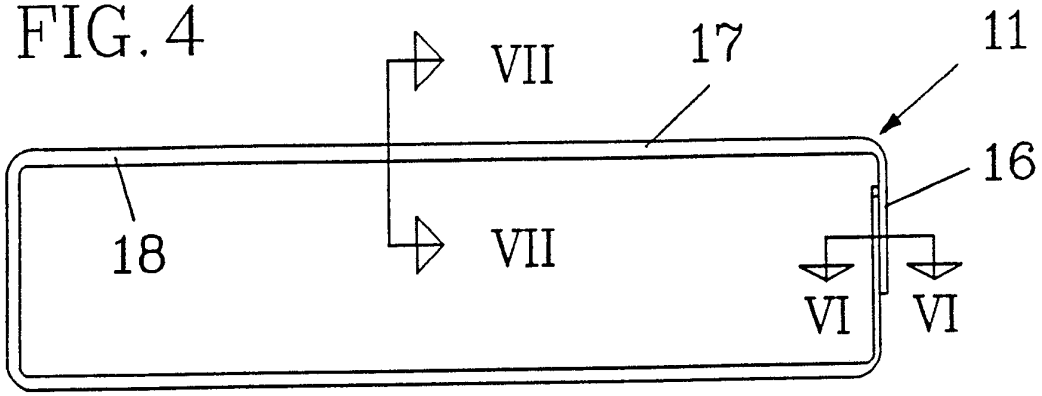


FIG. 5

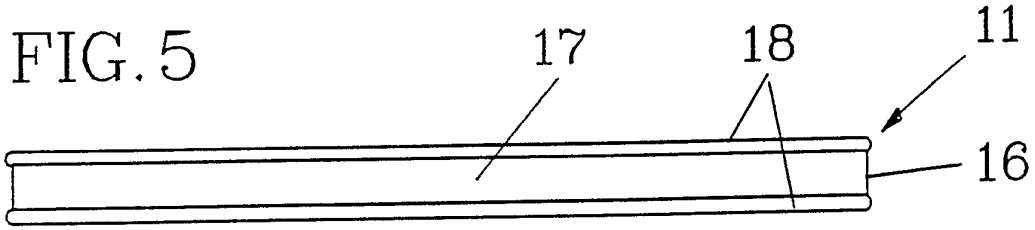


FIG. 8

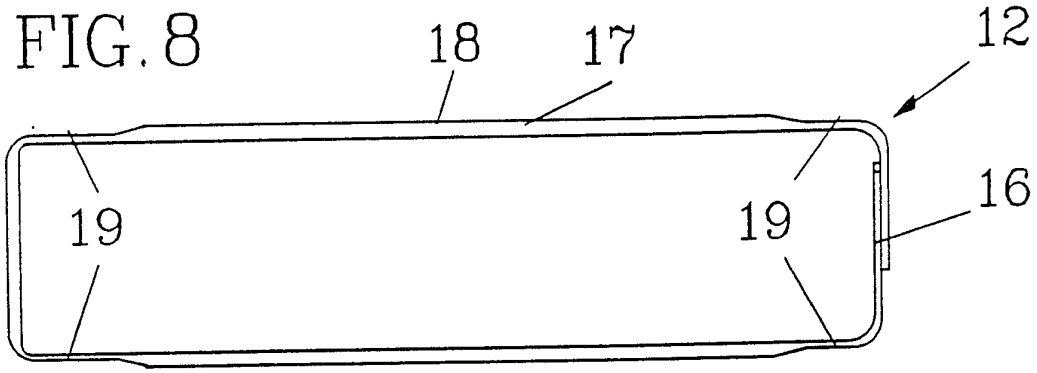
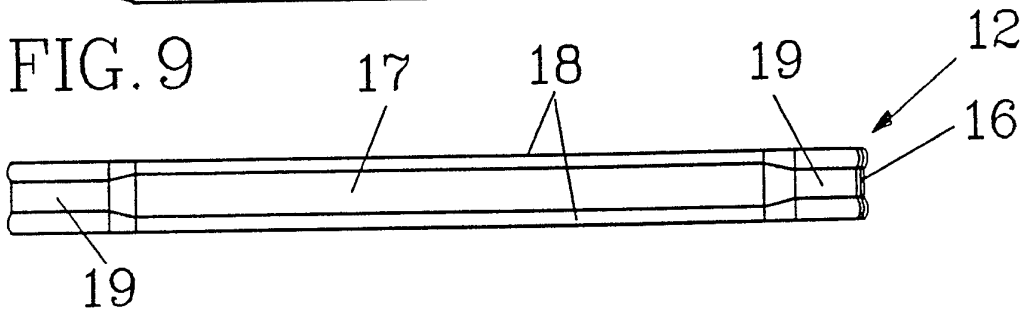


FIG. 9



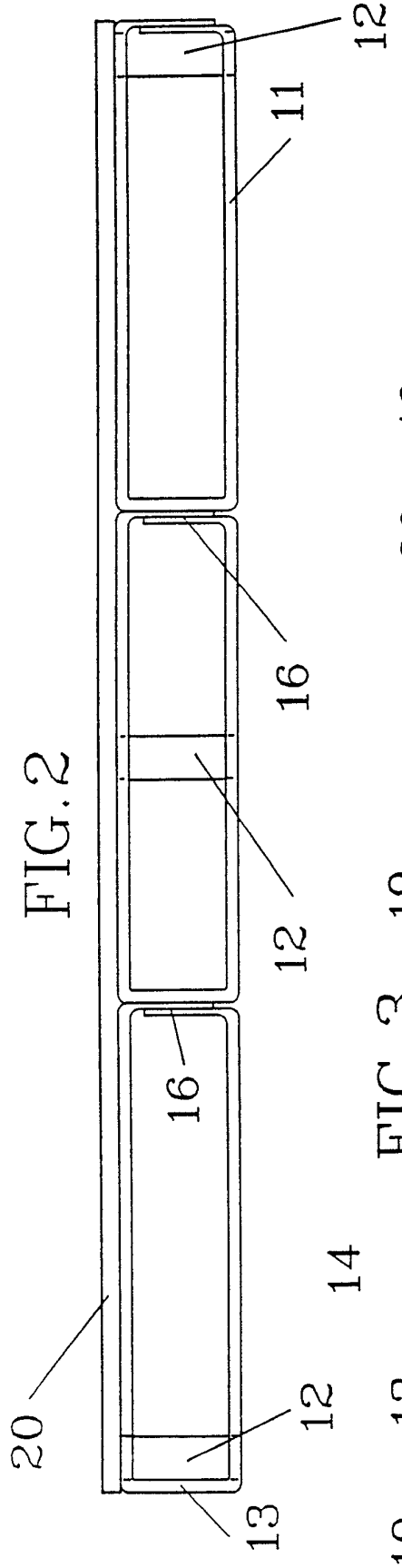


FIG. 2

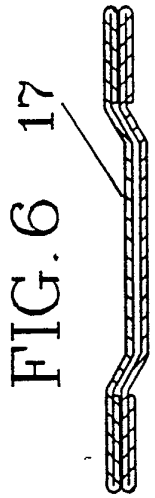


FIG. 6

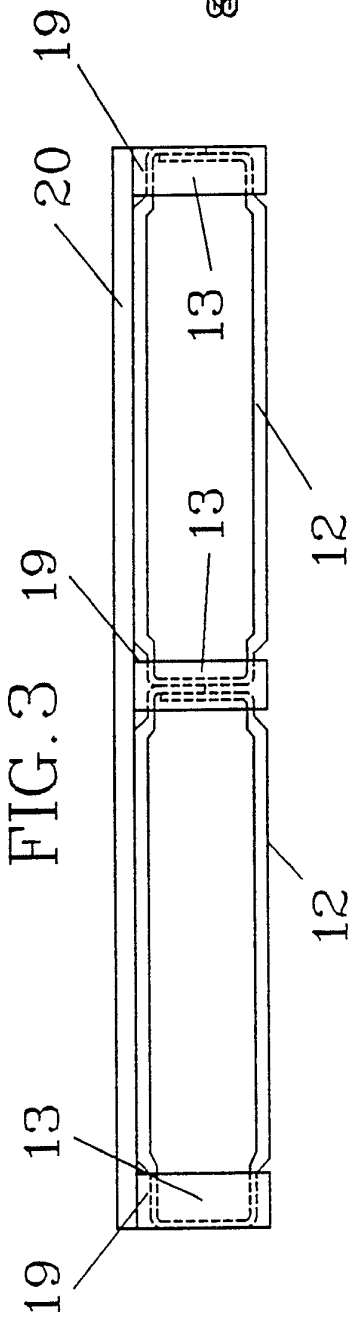


FIG. 3

FIG. 7

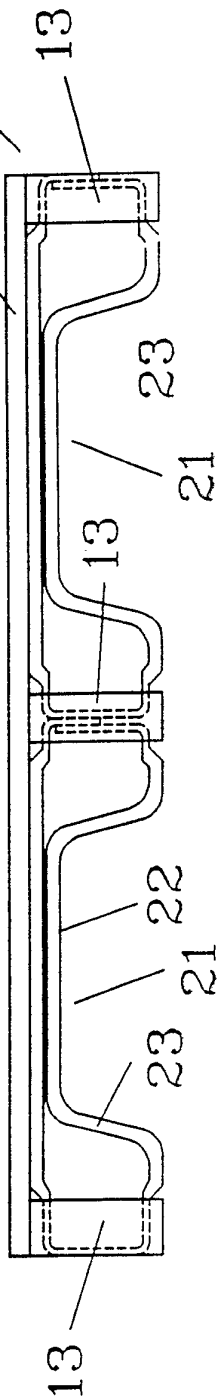


FIG. 11

FIG. 10

INTERNATIONAL SEARCH REPORT

International Application No PCT/SE89/00156

I. CLASSIFICATION OF SUBJECT MATTER (if several classification symbols apply, indicate all) [6]

According to International Patent Classification (IPC) or to both National Classification and IPC 4

B 65 D 19/28, 19/30

II. FIELDS SEARCHED

Minimum Documentation Searched [7]

Classification System [8]	Classification Symbols
IPC 4	B 65 D 19/00-19/44
US Cl	108: 51.1-57.1, 901; 206: 386, 595-600; 248: 346

Documentation Searched other than Minimum Documentation to the Extent that such Documents are included in the Fields Searched [9]

SE, NO, DK, FI classes as above

III. DOCUMENTS CONSIDERED TO BE RELEVANT [9]

Category [10]	Citation of Document, [11] with indication, where appropriate, of the relevant passages [12]	Relevant to Claim No. [13]
A	EP, A1, 0 026 009 (JEAN VAN NES) 1 April 1981	1
A	WO, A1, 87/04684 (STRETCH MACHINERY AB) 13 August 1987	1
A	Derwent's abstract No. 83 751464/35, SU 967 876	1

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IV. CERTIFICATION

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