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(54) Assembly strip and rounded edges laminated case so built.

(57) A rounded edges laminated cabinet, particularly a case for housing a TV receiver set is formed and transported as a two-dimensional or flat strip built up by a thin sheet of laminated plastic (1) forming the outer veneering bonded to at least three plastic panels (2, 3, 4) spaced apart and adapted to be joined together along their edges to assemble the cabinet. The cabinet is assembled by turning each panel by 90° with respect to the adjacent panel in order to bend the laminated plastic (1) over corresponding recurve end portions (10) of the panels that are then fastened into the final configuration by joint members (8, 8). A further side (5), if missing, is subsequently mounted by means of guides (42) formed at the free edges of the panels.

Panels are bonded to the laminated plastic by glueing, or by molding the panels onto the laminate, or directly extruding the panels over the laminate.

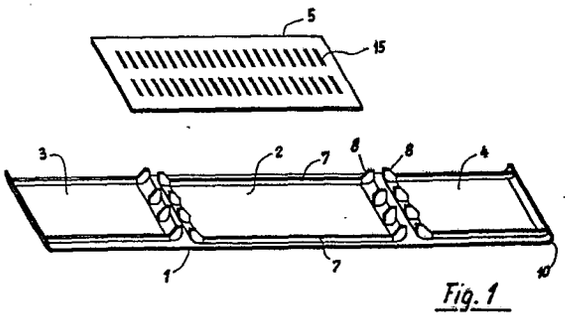

Fig. 1

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ASSEMBLY STRIP AND ROUNDED EDGES LAMINATED CASE SO BUILT

The present invention relates to a plastic cabinet or case having rounded edges, particularly a piece of furniture in form of a closed web obtained from a composite flat strip having joint members for the final assembly of the cabinet. The (open) cabinet so built as a closed web is adapted to house a TV receiver or to form the mainframe of a suspended cabinet.

It is known that cases for TV sets are built up by a closed web of wood or plastic material, in case veneered by a thin plastic sheet, and by two panels, respectively a front panel and a closing rear panel. A somewhat similar construction can be recognized also in suspended cabinets and the like. In the following reference will be made to a case for housing a TV receiver, but it is to be understood that the present invention also applies to other types of furniture.

The closed webs for TV receivers are usually built

by injection molding a plastic material with the final volume of the TV case by the manufacturer whereas the assembly of the TV set is accomplished in the laboratories of other factories.

The main disadvantage of this technique derives from the size of the empty case that has to be shipped and stored. Although the cases are substantially empty they must be properly packed for shipment and exhibit a volume that is practically the same of the complete TV set even if the product is quite light and has a value extremely lower. This causes high costs for shipping, packing and storing the empty cases. In order to build TV cases there are also known closed webs obtained from wooden panels that are veneered and glued together, as well as from wooden panels glued to laminated plastic and suitably milled at the edges, the laminate being subsequently bent around the panels and secured by means of glue and reinforcement corners. Although such a construction achieves a substantial reduction of the size of the unassembled cabinet, it is quite laborious both for the manufacturer and the assembler of the case. In fact the wood and the inner panels are to be precisely milled without cutting the veneering to allow for the bending of the four sides and the final assembly requires reinforcement parts to be glued in order to strengthen the case. Moreover additional supports, connections and reference shoulders for securing the components (cathode ray tube, circuits, loudspeakers, knobs, etc.) are to be built on the wooden parts with additional costs and complications.

It is therefore an object of the present invention to realize a plastic case for a TV receiver having rounded edges that can be packed, shipped and stored as a non

assembled article, thereby occupying a space that is greatly reduced with respect to the assembled case.

It is another object of the invention to realize a plastic cabinet, particularly a small suspended cabinet having the above characteristics of the TV case.

More particularly, according to the invention, the case is built in form of a plastic strip that is substantially two-dimensional and comprises three or four plastic panels glued or anyhow secured to a sheet of laminated plastic forming or carrying the outer veneering. Joint means is provided at adjacent edges of the panels for the final fastening together of the panels and laminate to form the assembled case, thereby reducing the assembly time to a few seconds.

The invention will now be disclosed with reference to some non limiting embodiments shown in the attached drawings in which:

FIGURE 1 is a perspective view of the flat strip of the invention incorporating three panels, also showing the fourth panel;

FIGURE 2 shows the assembled case that is turned down-side up for a better clearness;

FIGURES 3 to 5 show details of a preferred embodiment of the joint members;

FIGURE 6 illustrates a detail of the case of Fig. 2; and

FIGURES 7 and 8 show another embodiment of the joint members.

With reference to Fig. 1 there is shown an assembly strip according to the invention that comprises a panel 2 adapted to form the horizontal upper side of the assembled case, two equal panels 3 and 4 forming the vertical

side walls of the case, and a sheet of laminated plastic 1 connecting such elements. The panels are glued or anyhow attached to laminate 1, suitably spaced apart so that after turning by 90° the lateral panels the free portions of the laminate forms the recurved or rounded edges 22 of the assembled case shown in Fig. 2.

According to the illustrated embodiment, bottom panel 5 of the case is built as a separate piece and is mounted at the end of the assembly. The above is not to be considered as a limitation to building a strip of laminated plastic incorporating all the four panels that constitute the TV case. The reason of the choice depends on the size of the TV set. The linear envelope of a case for a 26" TV case can bring about a notable difference of costs between an embodiment having three panels and the embodiment having four panels, particularly when the panels are to be directly molded over the laminate. For cases having a smaller size the difference of costs is reduced and it is preferable the embodiment carrying all the four panels applied onto the strip.

Returning now to the embodiment shown in Figs. 1 and 2, each panel 2, 3 and 4 is provided with at least a pair of longitudinal ribs 7, 7 having the purpose of strengthening the structure, and with at least a series of joint members 8, more clearly shown in Figs. 3 to 5. When the strip incorporates three panels it is preferred that the end portions 10 of the lateral panels have a recurved shape and are provided with suitable members for fastening panel 5 (see Fig. 6).

Panel 5 is provided with vent slots 15, as well as with all the other components required for the assembly of the complete TV set, such as spacers, sockets, recesses,

reference shoulders, added materials, etc. All the above components are not shown in the figure for simplicity. However it is to be understood that the TV case can be built in such a way that almost every required component is mounted on panel 5 (cathode ray tube, circuits, etc.). This way the TV case can be partially assembled by bending and securing the three sides and then bottom panel 5 carrying all the required components can be mounted to complete the case, thereby making easier the assembly operation of the final product.

Figs. from 3 to 5 show a preferred embodiment of the joint members for securing together the parts. These members include flat tabs 23 rising from the panels and positioned slightly staggered. The shape of tabs 23 is substantially triangular with a rounded vertex 24, the radius being the same foreseen for the rounded edges of the assembled case. The curved end portion 28 of the panel extends for an arc of about 45° so as to evenly distribute the stresses on laminate 1 and matching the panels when the case is assembled. Tabs 23 opposing on two panels are staggered in order to position themselves side by side (Fig. 5) when the case is assembled. Each tab 23 carries a protruding pin 27 and a housing hole 26 having the same diameter. Pins and holes are properly positioned, e.g. as shown in Fig. 3, so as to engage with each other upon the rotation of a panel with respect to the other. The tabs are resilient enough to be deformed when the parts rotate due to the presence of the pins 27. After that the rotation is complete the pins are housed into the holes and the tabs elastically return to the original position as can be seen in Fig. 5. Cross-section of Fig. 4, along lines S-S, shows how the end portions of the pins are

tapered to make easier the introduction into holes 26. Fig. 1 shows four tabs on each adjacent edge of the panels, however the number of tabs can be increased or decreased as desired. As it is evident, the force required to elastically deform tabs 23 in the rotating step is quite modest and can be further reduced by suitable tapering and choice of the angles. On the contrary, once the parts are joined together, it would be necessary to act simultaneously on all the four pairs of tabs 23 diverting them in order to reopen the case to the flat configuration. Reinforcement ribs 29 and 30 staggered with respect to tabs 23 are provided to strengthen the structure opposing to fortuitous deformations. It is preferable to build ribs 29 and 30 as triangular ribs integral with the tabs. The latter in turn can be molded together with the panels or be mounted subsequently. The panels are of a plastic material such as shock resistant polystyrene and the covering or veneering sheet is a thermoplastic laminate, e.g. polystyrene. The outer surface of this laminate is already treated to obtain the desired finishing (imitating wood or metal etc.) for example by applying a heat transferable film. The case is assembled by rotating of 90° the lateral panels with respect to the inner one so as to bend the laminate over the corresponding curved portion of the panels that are then fastened into the final configuration by the joint members. Before accomplishing such operation a suitable glue or solvent can be advantageously spread on the surfaces of the joints, e.g. by spraying, and in case even on the inner surface of the laminate in order to obtain a better resistance of the assembled case. It is evident that the finishing of the case is much cheaper since it is accomplised in advance over a flat surface.

Moreover the panels carry supports or references for the assembly of the parts forming the complete TV set such as loudspeakers, knobs, etc.

In Fig. 5 it is shown a detail of the end edges 10 of the strip. They are provided with a guide groove 42 into which the end profile 40 of panel 5 slides. Flat tabs 43 can be provided in this area too, only having a support function.

With reference to Figs. 6 and 7 an alternate embodiment for the joint members is shown. A reinforcing portion 44 extending between two ribs 41 is equipped with pawls 49 in the middle portion and with two additional reinforcements 47 laterally positioned with respect to the latter. Pawl 49 is molded with the panel by enlarging the corresponding edge 44 and comprises a shank 45 and a head 46 that define a rectangular recess together with the flat surface of edge 44. The adjacent panel edge 55 is L shaped having an upper portion 50 and a lower portion 52 defining a recess 56 into which fits the upper part of edge 44 that is not enlarged. This way one obtains the fastening as for the horizontal forces applied to the assembled case. Edge 50 is broken at an area opposing pawl 49, to form a plug 60 engaging recess 57 of pawl 49 when the case is assembled. This ensures the fastening of the case against vertical forces.

There are possible several processes to apply the panels onto the flat sheet of plastic laminate. Panels can be molded and secured to the laminate in a centering frame by glueing or by ultrasonic bonding. As an alternative the sheet of finished laminate can be placed at the bottom of an injection mold wherein by press molding the panels are formed, simultaneously with a local fusion of the

two elements (laminate and granulates injected). Finally the sheet of laminate can be coupled to the panels into an extruding machine for plastic granulates having the profile of the panel cross section and in this case a further milling operation is required to remove the portions below the molded edges of the case without cutting the thichness of the laminate.

Although the invention has been described with reference to some particular embodiments, it is not to be considered as limited to the latter and the scope of the invention extends to the evident changes and/or modifications that anyhow provide for the building of a rounded edges case from an assembly strip that is substantially two-dimensional and foldable along predetermined edges and equipped with joint members.

CLAIMS

1. An assembly strip that is substantially two-dimensional for assembling a rounded edges veneered case or cabinet, characterized in that it is formed by at least three panels of a plastic material (2, 3, 4) placed one after the other and spaced apart onto a single sheet of plastic laminate (1), and in that said panels (2, 3, 4) are provided with joint means (8, 8) at adjacent edges.

2. An assembly strip as claimed in claim 1, characterized in that said joint means (8, 8) comprises pairs of plastic flat tabs (23, 23), each carrying a pin (27) and a hole (26) adapted to reciprocally engage a hole and a pin on the adjacent panel after superimposing the tabs (23) with a temporary elastic deformation of the tabs until the pins fit into the holes.

3. An assembly strip as claimed in claim 2, characterized in that said tabs (23) are orthogonal to the corresponding panels and equally spaced apart on them, and are provided with at least a reinforcing side rib (29, 30) on the side opposed to the one carrying the pin.

4. An assembly strip as claimed in claim 1, characterized in that said joint means comprises engagement pawls on one side of the panel and portions that are complementary and turned by 90° with respect the said pawls, on the adjacent panel.

5. An assembly strip as claimed in claim 1, incorporating three panels, characterized in that the end edges of the panels (3, 4) are provided with guide profiles or grooves (42) for the introduction of a further panel (5) to form the bottom of the case.

6. A rounded edge case in form of a closed web, parti-

cularly a a case for enclosing a television receiver, build from an assembly strip according claim 3, 4 or 5, characterized in that said panels (2, 3, 4) are provided with longitudinal reinforcing ribs (7, 7; 41, 41) and with supports for securing the several components of the complete television receiver, and in that the outer surface of the sheet of plastic liminate (1) is covered by a finishing film.

7. A case as claimed in claim 6, characterized in that said sheet of plastic laminate (1) is secured to said panels (2, 3, 4) by glueing.

8. A case as claimed in claim 6, characterized in that said sheet of plastic laminate (1) is secured to the panels (2, 3, 4) when forming them in a injection mold, said sheet of plastic laminate being placed at the bottom of the mold and being partially melt on its inner surface during the molding of the panels.

9. A case as claimed in claim 6, characterized in that said strip is formed by coupling the sheet of plastic laminate to an extruding machine producing a continuous panel and that said continuous panel is subsequently milled to form the discrete panels spaced apart onto the strip.

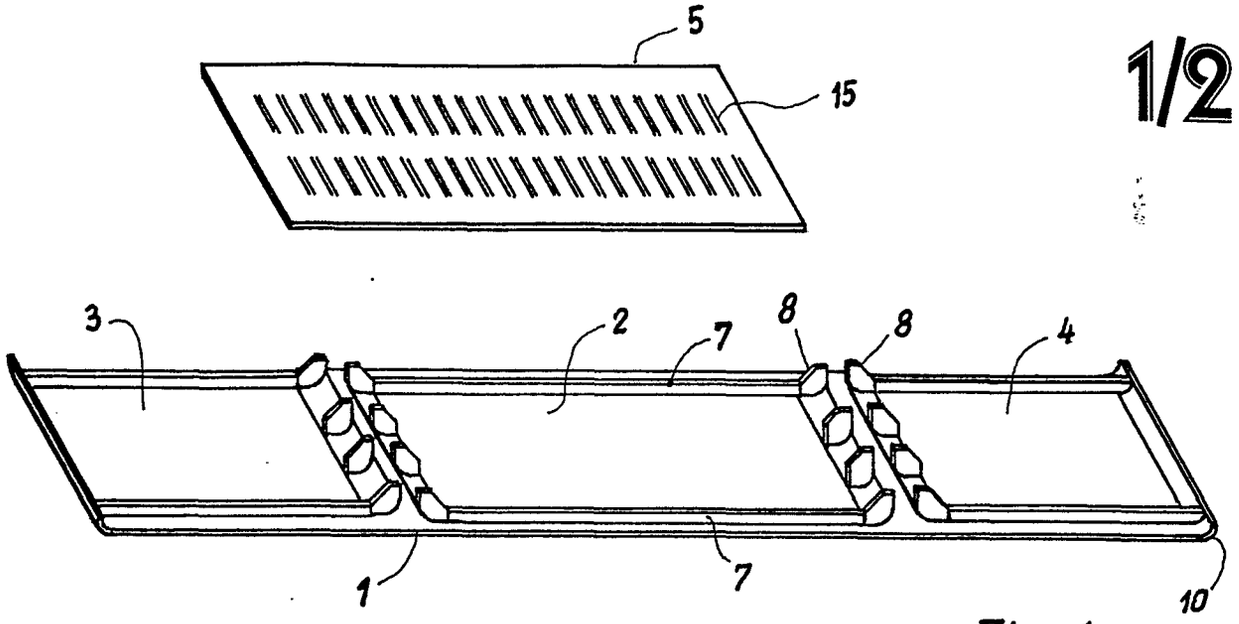

Fig. 1

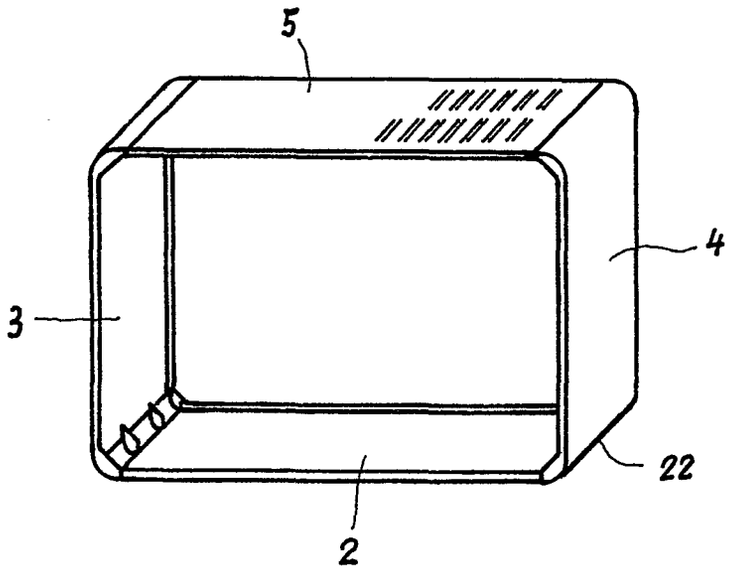

Fig. 2

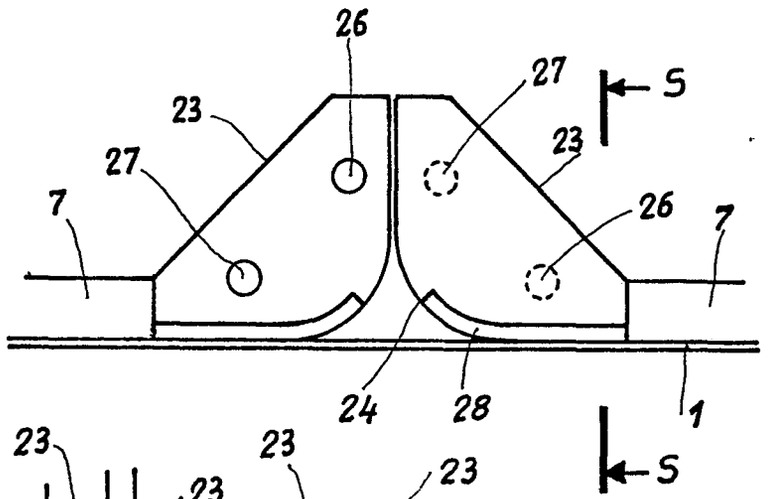

Fig. 3

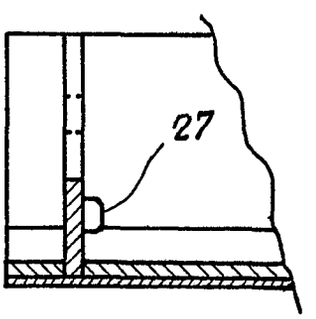

Fig. 4

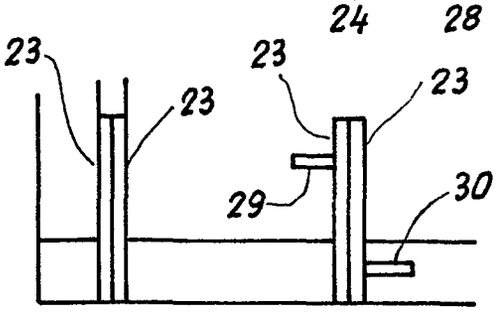

Fig. 5

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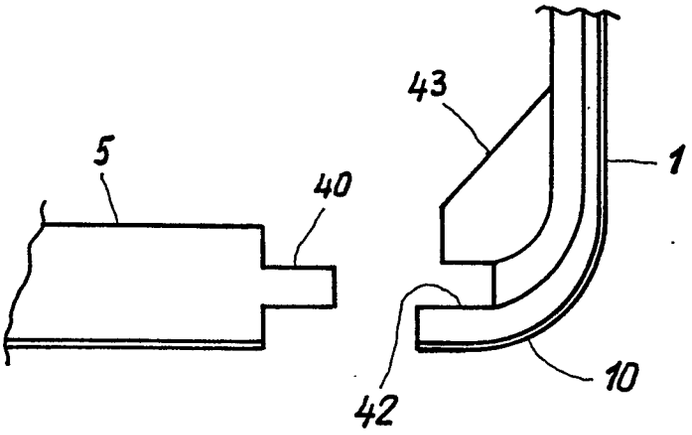

Fig. 6

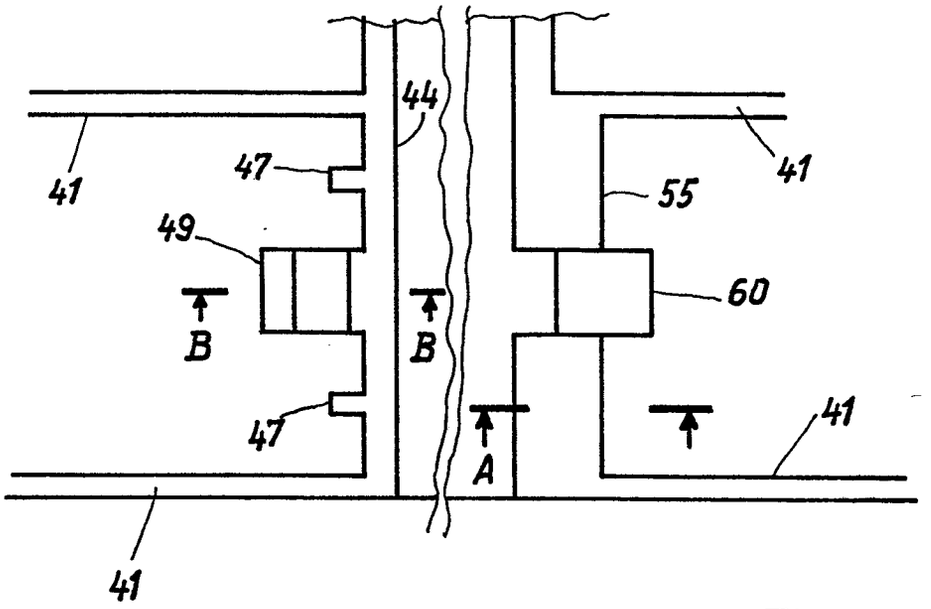

Fig. 7

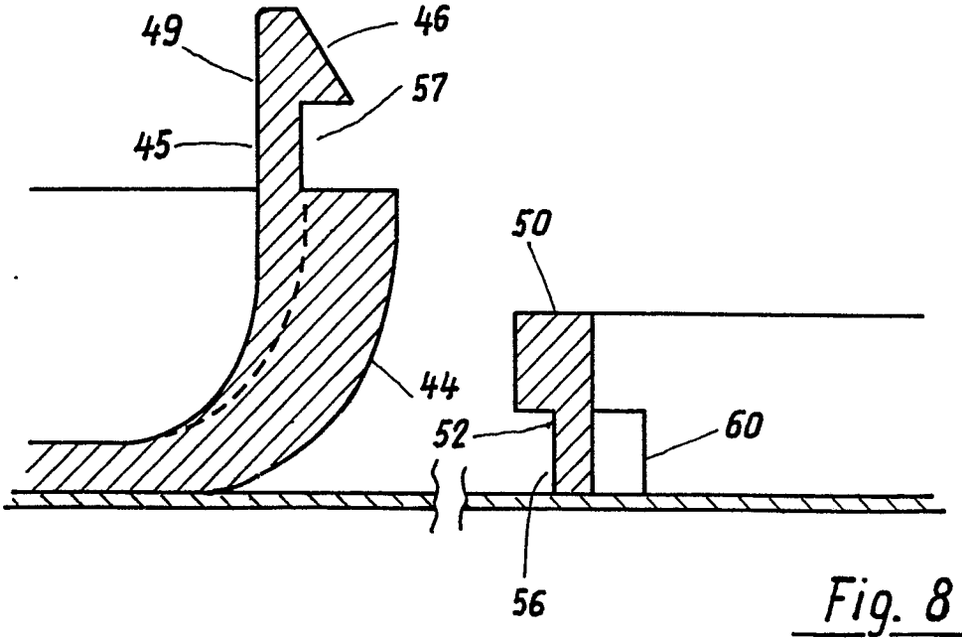

Fig. 8

European Patent Office

EUROPEAN SEARCH REPORT

0062013
Application number

EP 82 83 0076

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl. ³)
X	FR-A-1 424 379 (S.A.LES SPECIALITES C.D.) *The whole document*	1,5-7	A 47 B 96/20 A 47 B 81/06
Y		2,4	

Y	FR-A-2 273 183 (DUPREE) *Page 8, lines 6-39; figures 2,12,13*	2,4	

TECHNICAL FIELDS SEARCHED (Int. Cl. ³)

A 47 B
H 05 K
F 16 B

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	28-06-1982	SCHMITTER BERNARD

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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