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(54) Improvements in connecting devices.

(57) A connecting device for interconnecting components such as drawer wall panels at right angles to one another has the respective projections (5,6) extend at right angles to one panels to be interconnected, the respective projections (5,6) which engage with the panels being carried on separate parts of the connecting device which may be interengaged so that the respective projections (5,6) extend at right angles to one another. In this way the connecting device may be supplied in separable parts which can be packed flat, the parts being interengaged during assembly of the drawer or other article so that the projections and the wall panels or other components engaged therewith extend at right angles to one another.

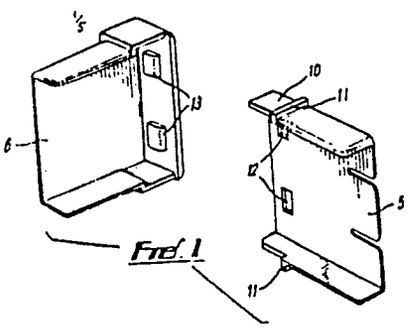

Fig. 1

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Title: Improvements in Connecting Devices

The invention relates to connecting devices for interconnecting components at right angles to one another and is especially, but not exclusively applicable to components for use in the construction of articles of furniture including drawers.

Many articles of furniture are supplied to customers in a "knock-down" form, that is to say in the form of separate components which are assembled by the customer to form the article of furniture concerned. In the case of articles of furniture incorporating drawers the drawers are commonly also supplied in "knock-down" form and comprise wall panels which are interconnected at right angles by corner connectors and are assembled in conjunction with a base and facia board to form a complete drawer assembly.

Drawers constructed in this manner can be packed in relatively flat form since the wall panels, base and facia all consist basically of flat boards. However the connecting members which are used to interconnect the wall panels at right angles to one another have spigots or similar projections extending from them in two directions at right angles and cannot therefore be packed flat.

It is an object of the present invention to provide a connecting device for interconnecting components such as drawer wall panels at right angles to one another in which this drawback is obviated or mitigated.

According to the invention there is provided a connecting device for interconnecting components at right angles to one another and having projections adapted to engage with the ends of the components to be interconnected, the respective projections which engage with such components being carried on

separate parts of the connecting device which may be inter-engaged such that the respective projections extend at right angles to one another.

In this way the connecting device may be supplied to the customer in separable parts which can be packed flat, the parts being interengaged during assembly of the article such that the projections and the components engaged therewith extend at right angles to one another.

Preferably one of said parts includes a corner piece on which the associated projection is carried, the corner piece being hollow and being adapted to receive a portion of said other part, means being provided for engaging the said portion in the corner piece such that the respective projections extend from the assembled connecting device in two directions at right angles to one another.

The connecting device may be provided with a single projection for engagement with each of the components to be interconnected or with a plurality of projections for each component. Said portion of the part which engages with the hollow corner piece may extend into the corner piece from the side from which the projection or projections will extend after assembly or the part which engages with the corner piece may be arranged to pass through the corner piece from the opposite side.

Preferably the parts which form the connecting device are interengaged by means of internal projections in the hollow corner piece which co-operate with apertures or recesses in the portion of the other part which engages with the corner piece.

The projections may be engaged with the components to be interconnected in any suitable manner, for example by means of adhesive. In the case of connecting devices for inter-connecting drawer side walls, the projections are preferably

provided with releasable locking means for engagement with the wall panels. Where the wall panels are of hollow extruded plastics form the projections may be adapted to engage within the open ends of the panels, the locking means comprising projecting detents on the projections which engage with apertures adjacent the end of the panel.

Embodiments of the invention will now be described, by way of example only, with reference to the accompanying drawings, in which:-

Figs. 1 and 2 are perspective views showing the parts of a corner connector for use in interconnecting drawer wall panels before assembly;

Figs. 3 and 4 are perspective views showing the assembled corner connector;

Fig. 5 is a perspective view showing the manner in which the connector is used to interconnect the drawer wall panels;

Fig. 6 is a perspective view of an alternative form of corner connector in its assembled condition;

Fig. 7 is a perspective view showing the components of the corner connector shown in Fig. 6 before assembly;

Fig. 8 is a view of the separated components from the opposite side from that shown in Fig. 7; and

Figs. 9, 10 and 11 are views similar to Figs. 6, 7 and 8 showing an alternative embodiment.

Referring to Figs. 1 to 4, there is shown a corner connector for interconnecting two drawer wall panels at right angles to one another. The connector is intended for use with wall panels of extruded plastic form and is provided with a first projection 5 and a second projection 6, extending at right angles to one another from a body member or corner post 7. Each of the projections 5, 6 is of generally U-shaped

form in cross-section and carries a projecting detent 9 which engages with a complementary hole in the side wall of the associated panel. In this way the panel may be disengaged from the corner post subsequent to assembly if desired.

The corner connector is constructed from two separable parts which are shown in their separated condition in Figs. 1 and 2. The body member 7 is hollow and carries the spigot 6. The other spigot 5 is provided with an extension 10 which is adapted to be inserted within the hollow interior of the corner post 7 to an extent limited by abutment of projections 11 with the upper and lower ends of the corner post. The extension 10 is provided with apertures 12 which engage with detents 13(Fig. 1) formed within the hollow body portion of the post 7. In this way the two parts can be locked together to form the assembled corner piece as shown in Figs. 3 and 4.

In use of the connecting device two of the male components incorporating the extensions 10 are inserted in each end of the drawer back as shown in Fig. 5 and retained in position by engagement of the detents 9 with the holes in the panel. The extensions 10 therefore project from each end of the rear wall panel but are disposed in the same general plane as the panel. Two of the female components incorporating the body portions 7 are inserted in the rear end of each of the drawer side wall panels and are retained in position by engagement of the detents 9 with the holes in the associated panels. Each body portion 7 projects beyond the end of the associated side wall panel but is again disposed in the same general plane. The components may therefore be packed flat without any parts projecting at right angles to the general plane of the wall panels to which they are fitted.

When it is desired to assemble the drawer the extensions 10 are pushed into the body portions 7 of the associated female components as indicated by the arrows in Fig. 5 and engage with the detents 13 thereby locking the two parts of the connecting device together with the spigots 5, 6 and hence the panels with which they are engaged, extending at right angles to one another. If it is desired to disassemble the drawer the walls can be disengaged from the corner connector by releasing the detents 9 from the complementary holes in the panels. The drawer is completed by a drawer bottom which engages with grooves (not visible in Fig. 5) formed in the inner faces of the side and back wall panels, and a drawer front attached to the forward ends of the side wall panels.

The projections 11 form extensions of the upper and lower faces of the corner posts 7 such that they are of rectangular shape in plan. This results in the side and back wall panels overlapping one another at the inside of the corner which avoids the appearance of unsightly gaps due to variations in manufacturing tolerances.

Referring now to Fig. 6, there is shown a corner connector for interconnecting two drawer wall panels at right angles to one another. The connector is intended for use with wall panels of extruded plastic form and is provided with a first series of three projections 15 and a second series of three projections 16, the respective series extending at right angles to one another from a body member or corner post 17. The corner post 17 is in upper and lower sections separated by a recess 18 which, when the corner post and panels are assembled, is aligned with a rebate or groove in the side wall panel by means of which the drawer is mounted on a runner, a similar runner being provided

at the opposite side.

Each of the spigots is of generally U-shaped form in cross-section and carries a projecting detent 19 which engages with a complementary hole in the side wall of the associated panel. In this way the panel may be disengaged from the corner post subsequent to assembly if desired.

The corner connector is constructed from two separable parts which are shown in their separated condition in Figs. 7 and 8. The body member 17 is hollow and carries the series of spigots 16. The other series of spigots 15 are carried by a face plate 20 which is also provided on its opposite side with projecting lugs 21 adapted to engage within the hollow interior of the corner post 17. The lugs 21 are provided with apertures 22 which engage with detents 23 (Fig. 8) formed within the hollow body portion of the post 17. In this way the two parts can be locked together to form the assembled corner piece as shown in Fig. 6. The face plate 20 is provided with a cutout 24 for alignment with the opening 18 in the corner post 17 to accommodate the drawer runner. A similar cutout is provided adjacent the other end of the plate 20 and serves a similar purpose when the component is reversed as is necessary when forming the other corner of the drawer. Left and right hand versions of the female component incorporating the body member 17 are required.

In use of the connecting member, one of the male components incorporating the lugs 21 is inserted in each end of the drawer back and retained in position by engagement of the detents 19 with the holes in the panel. The lugs 21 therefore project from each end of the rear wall panel but are disposed in the same general plane as the panel. One of the female components incorporating the body portion 17 is inserted in the rear end of each of the

drawer side wall panels and is retained in position by engagement of the detents 19 with the holes in the associated panels. The body portion 17 projects beyond the end of the associated side wall panel but is again disposed in the same general plane. The components may therefore be packed flat without any parts projecting at right angles to the general plane of the wall panels to which they are fitted.

When it is desired to assemble the drawer the lugs 21 are pushed into the body portions 17 of the associated female components and engage with the detents 23 thereby locking the two parts of the connecting member together with the series of spigots 15, 16 and hence the panels with which they are engaged, extending at right angles to one another. If it is desired to disassamble the drawer the walls can be disengaged from the corner connector by releasing the detents 19 from the complementary holes in the panels. It will be noted that a slot 25 is formed adjacent the lower end of the body member 17 and a complementary slot 26 adjacent the lower end of the face plate 20. These slots serve to accommodate the corner of the drawer bottom which engages with grooves formed in the inner faces of the side and back wall panels.

Referring to Figs. 9 to 11 of the drawings, Fig. 9 shows an assembled corner connector and is generally similar to that shown in Fig. 6. In this case however the manner of interconnecting the two parts differs from that of the arrangement shown in Figs. 6 to 8.

As can be seen from Figs. 10 and 11 the female component incorporates a body member or post 37 which is in the form of a collar or sleeve which is open at opposite ends so that the male component may be inserted completely through the female component

from one end. The female component incorporates one set of spigots 36 carrying detents 39 in the manner of the equivalent component in the embodiment shown in Figs. 6 to 8. In this case the other set of spigots 35 are carried on back plates 40A and 40B and are of such a length that the spigots may be inserted completely through the body member 37 to project at the opposite side by the desired final distance. The two upper spigots are carried by the plate 40A and the lower spigot by a separate plate 40B. In this case no separate means of locking the two parts together is provided, the male components being retained in place by engagement of the detents 39 with the holes in the associated wall panel of the drawer. The portions of the spigots 35 adjacent to the back plates 40A and 40B could however be provided with apertures for engagement with detents formed within the hollow portion of the body member 37.

In use of this embodiment the female components are engaged in the rear ends of the side panels of the drawer and the male components are supplied in loose form. When it is desired to assemble the drawer the male components are inserted through the hollow body portions 37 of the female components and into the open ends of the drawer back until the detents 39 engage with the complementary apertures in the back panel. The series of spigots 35, 36 and the panels with which they engage therefore extend at right angles to one another. If it is desired to dismantle the drawer the panels can be released from the corner connectors by disengaging the detents 39 from the associated apertures in the wall panels.

Thus, the embodiments described enable a drawer construction consisting of wall panels interconnected at right angles to be

packed in a substantially flat form without parts of the corner connectors projecting out of the general plane of the associated components. This enables savings in space to be effected and reduces the likelihood of damage due to breakage of projecting parts. After unpacking the components can be quickly and easily erected to form a drawer construction while still preserving the facility for dismantling the drawer if required.

Various modifications may be made without departing from the invention. For example any desired number, size and arrangement of spigots may be provided for engagement with the respective wall panels. Other means of releasably interconnecting the spigots and the associated wall panels may also be utilised and if dismantlin is not required a more permanent form of connection, such as by use of adhesive, may be adopted. The components described are particularly suitable for use in constructing drawers having hollow extruded wall panels but the invention may also be applied to drawers having walls formed from moulded or solid panels and to connectors for interconnecting a wide variety of components other than drawer panels.

1. A connecting device for interconnecting components at right angles to one another and having projections adapted to engage with the ends of the components to be interconnected, characterised in that the respective projections which engage with such components are carried on separate parts of the connecting device which may be interengaged such that the respective projections extend at right angles to one another.

2. A connecting device according to claim 1 characterised in that one of said parts includes a corner piece on which the associated projection is carried, the corner piece being hollow and being adapted to receive a portion of said other part, means being provided for engaging the said portion in the corner piece such that the respective projections extend from the assembled connecting device in two directions at right angles to one another.

3. A connecting device according to claim 2 characterised in that said portion of the part which engages with the hollow corner piece extends into the corner piece from the side from which the projection will extend after assembly.

4. A connecting device according to claim 2 characterised in that the projection on the part which engages with the hollow corner piece is arranged to pass through the corner piece from the side opposite to that from which the projection will extend after assembly.

5. A connecting device according to any of claims 2 to 4 characterised in that the parts which form the connecting device are interengaged by means of internal projections in said hollow corner piece which co-operate with apertures or recesses in the portion of the other part which engages with the corner piece.

6. A connecting device according to any preceding claim characterised in that said projections are adapted to engage with the components to be interconnected by means of releasable locking means.

7. A connecting device according to claim 6 characterised in that said releasable locking means comprises projecting detents on said projections adapted to engage with complementary apertures provided adjacent the ends of the components to be interconnected.

8. A connecting device according to any of claims 1 to 5 characterised in that said projections are adapted to engage with the components to be interconnected by means of adhesive.

9. A connecting device according to any preceding claim characterised in that a plurality of projections are provided for engagement with each of the components to be interconnected.

10. A drawer having back and side walls characterised in that the back and side walls are interconnected by connecting devices according to any of the preceding claims.

11. A wall for a drawer comprising a panel member having apertures in its opposite ends characterised by a connecting member engaged in at least one of said apertures and adapted for engagement with a complementary connecting member carried by a further separate wall panel whereby to interconnect the panels at right angles to one another.

12. A wall for a drawer according to claim 11 characterised in that said connecting members are releasably engaged with the associated wall panels.

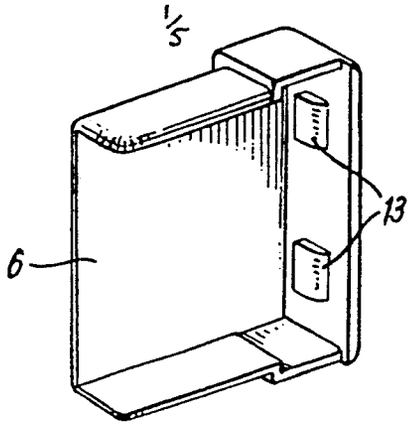
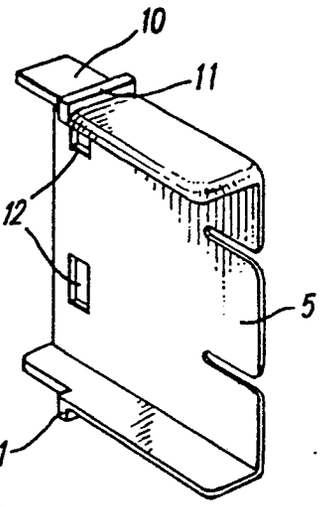
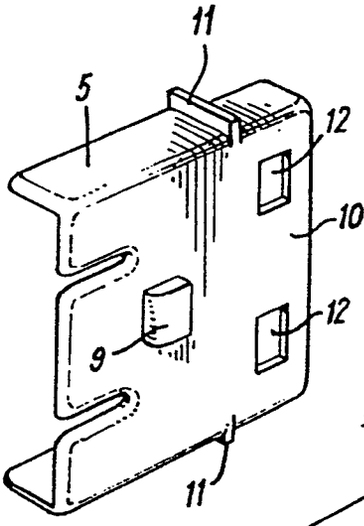


FIG. 1





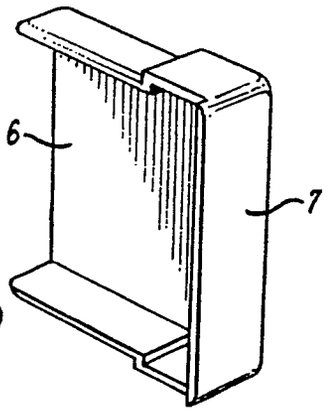


FIG. 2

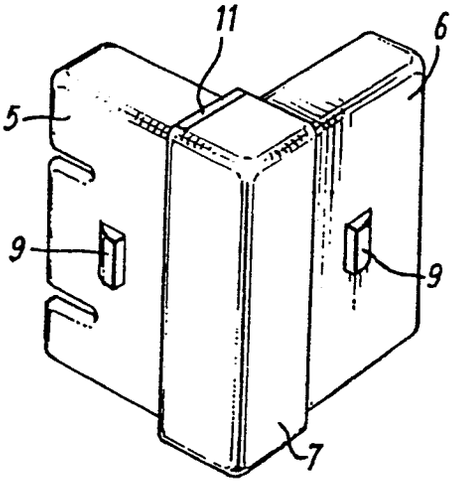


FIG. 3

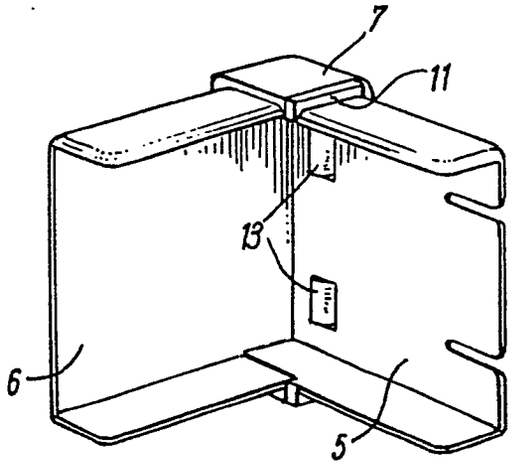


FIG. 4

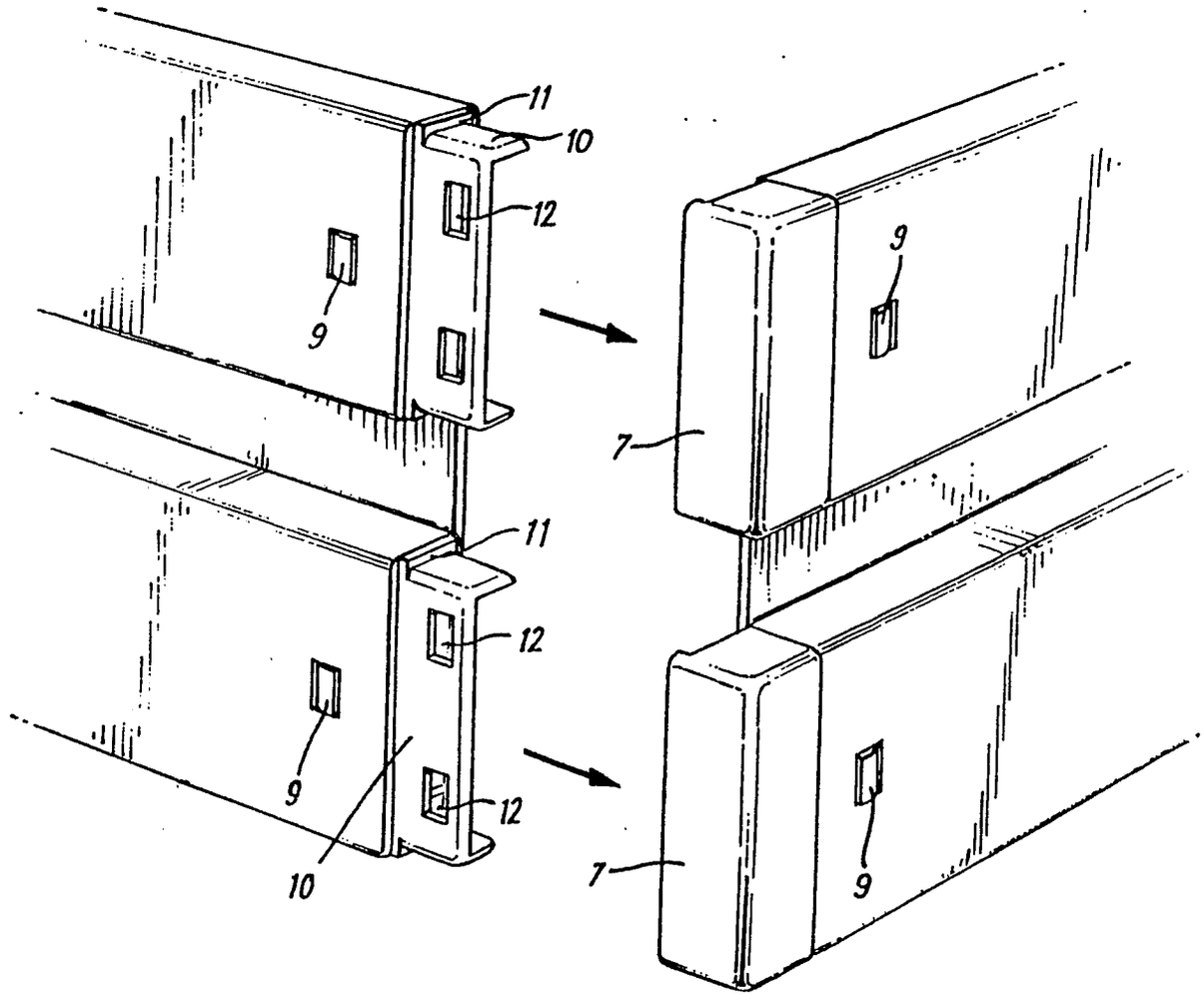


FIG. 5

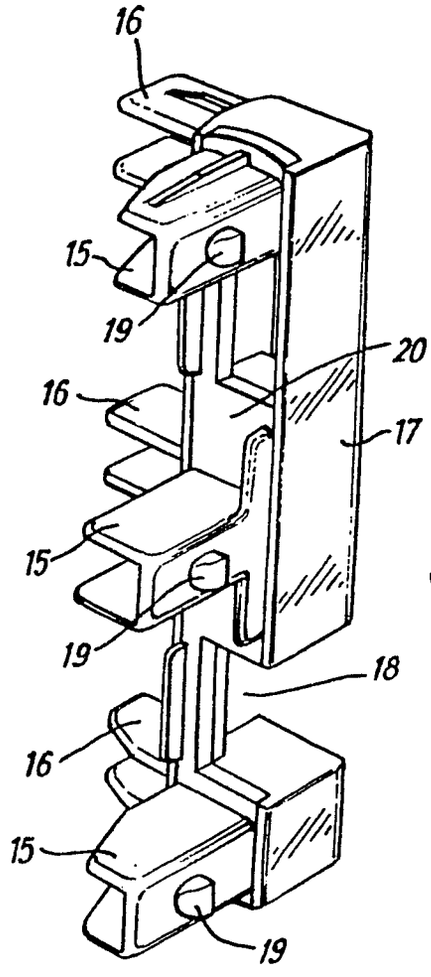


FIG. 6

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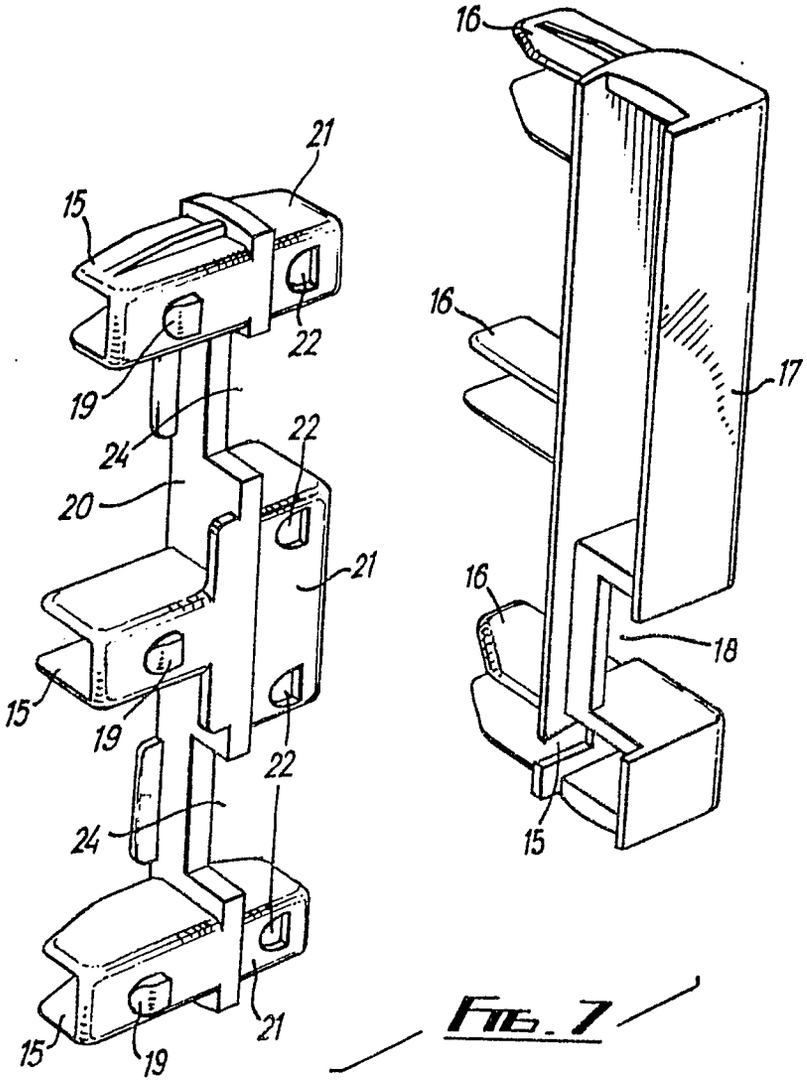
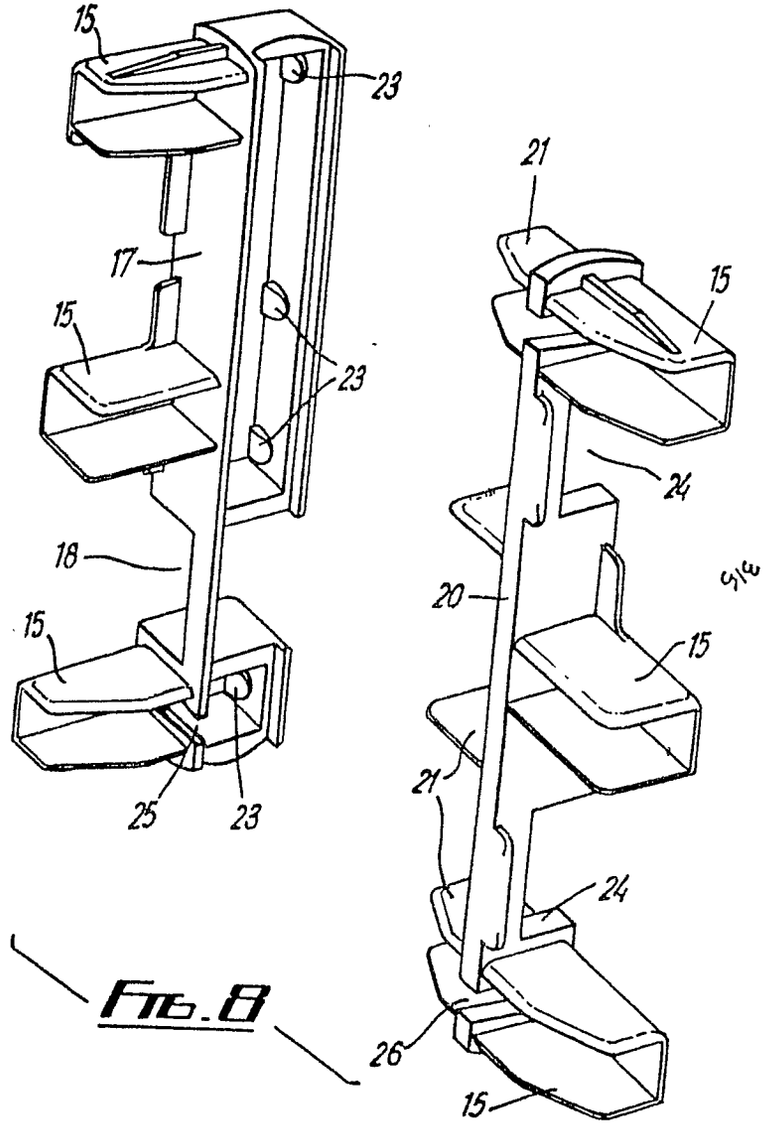


Фиг. 7



Фиг. 8

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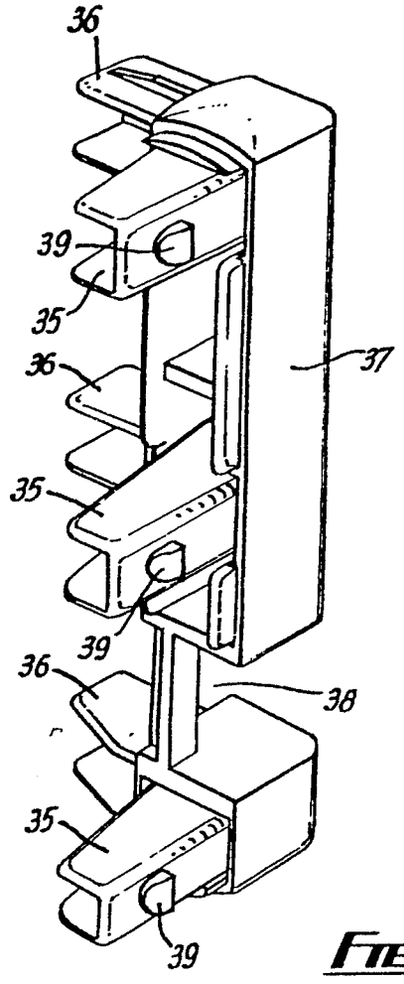

FIG. 9

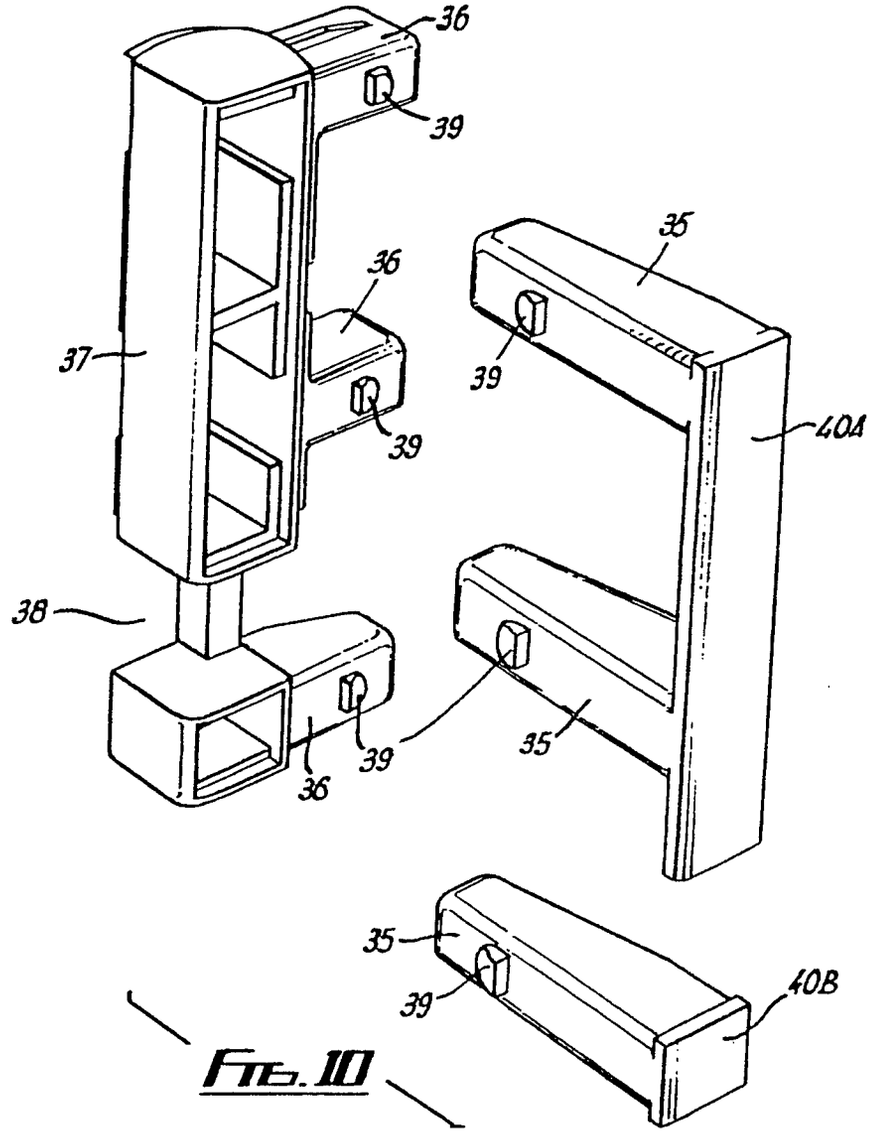

FIG. 10

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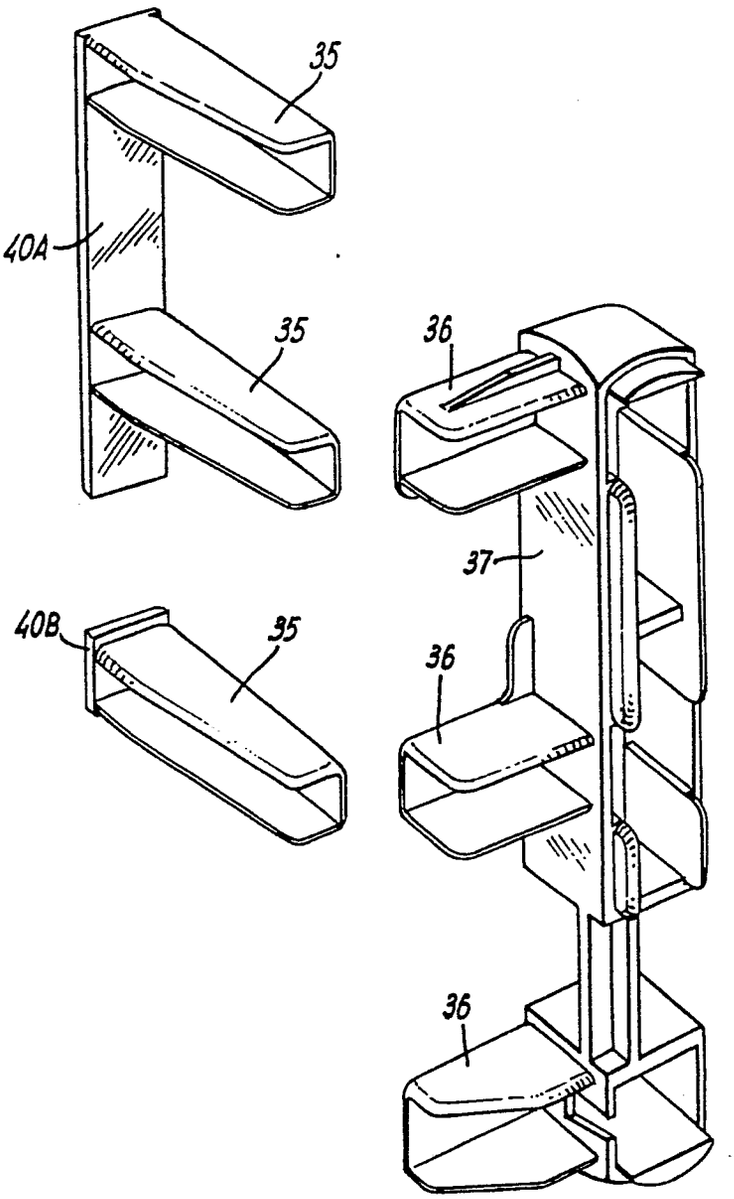

FIG. 11

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Application number

European Patent Office

EUROPEAN SEARCH REPORT

EP 79 302 748.3

DOCUMENTS CONSIDERED TO BE RELEVANT			CLASSIFICATION OF THE APPLICATION (Int. Cl.)
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	
	DE - A1 - 2 715 830 (MACKENZIE KING et al.) * fig. 6 *	1-7, 9	A 47 B 88/00 F 16 B 5/07
	FR - A1 - 2 358 129 (L.B. PLASTICS) * fig. 3 *	1-7, 9	
	US - A - 3 752 553 (BILDAHL et al.) * fig. 5 *	1-7, 9	
	US - A-4 108 520 (LITCHFIELD) * fig. 3 *	1-7, 9	TECHNICAL FIELDS SEARCHED (Int.Cl.)
A	DE - U - 7 527 969 (PHILIPS)		A 47 B 88/00 F 16 B 5/00 F 16 B 12/00
A	FR - A - 1 569 070 (BOLTE & CIE)		
A	GB - A - 1 410 377 (L.B. PLASTICS)		

CATEGORY OF CITED DOCUMENTS

X: particularly relevant
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E: conflicting application
D: document cited in the application
L: citation for other reasons

&: member of the same patent family, corresponding document

X The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Berlin	22-02-1980	ZAPP

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