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(54) Title: FRAME SECTION FOR A SWITCHING CABINET RACK

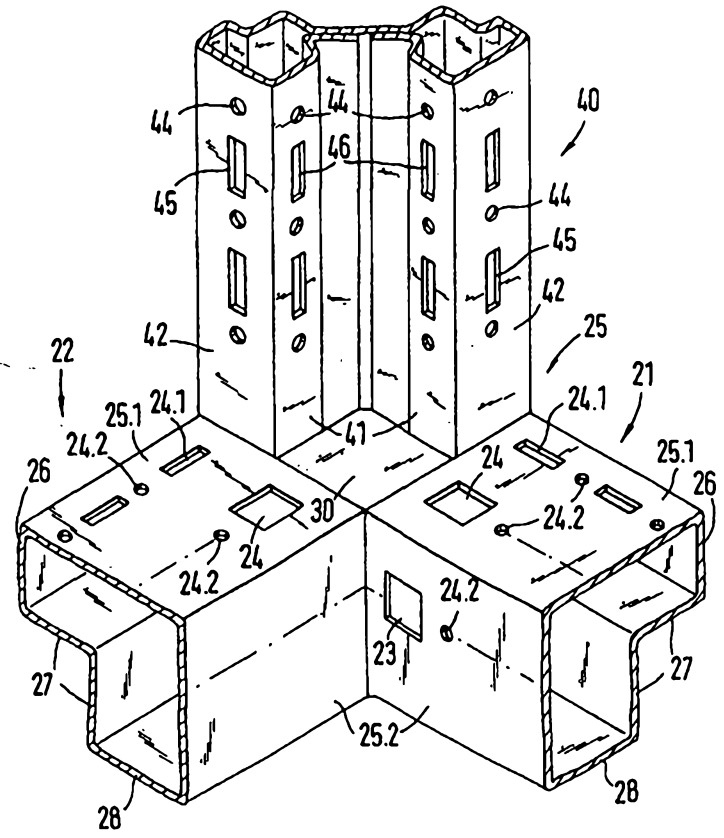
(54) Bezeichnung: RAHMENPROFIL FÜR EIN RAHMENGESTELL EINES SCHALTSCHRANKES

(57) Abstract

The invention relates to a frame section for a switching cabinet rack comprising at least one inner wall which faces the inside area of the switching cabinet and is fitted with a row of regularly spaced fastening cavities. The frame section's fastening cavities do not reduce rigidity to any significant degree. At the same time fixtures can be mounted on the fastening cavities in a stable manner. This is achieved by designing the fastening cavities as slotted openings whose clear openings are larger in the longitudinal direction of the frame section than the width of the clear openings perpendicular to the longitudinal direction.

(57) Zusammenfassung

Die Erfindung betrifft ein Rahmenprofil für ein Rahmengestell eines Schaltschrankes mit mindestens einer dem Innenraum des Schaltschrankes zugewandten Innenwand, die mit wenigstens einer Reihe von in gleicher Teilung eingebrachten Befestigungsaufnahmen versehen ist. Ein Rahmenprofil, bei dem die Beeinträchtigung der Steifigkeit durch die Befestigungsaufnahmen gering ist, wobei jedoch gleichzeitig eine stabile Anbringung von Einbauten an den Befestigungsaufnahmen gewährleistet ist, wird dadurch geschaffen, daß die Befestigungsaufnahmen als schlitzförmige Durchbrüche ausgebildet sind, deren lichte Öffnungsweite in Längsrichtung des Rahmenprofiles größer ist als die lichte Öffnungsweite quer zur Längsrichtung.



FRAME SECTION FOR A SWITCHING CABINET RACK

The invention relates to a frame section for a rack of a switchgear cabinet with at least one interior wall facing the interior of the switchgear cabinet, which is provided with at least one row of fastening receivers cut at even distances.

A rack of this type is described in DE 33 44 598. The rack has twelve identical frame sections, which are connected with each other. The frame sections support two interior walls, which are connected with each other at right angles. A row of fastening receivers has been cut into each of these interior walls. The fastening receivers are constituted by holes with an essentially square cross section.

It is an intention of at least an embodiment of the invention to create a frame section of the type mentioned at the outset, wherein the impairment of the stiffness because of the fastening receivers is small and wherein a stable installation of built-ins at the fastening receivers is possible.

According to the present invention, there is provided a frame section for a rack of a switchgear cabinet with two interior walls at right angles with each other and facing the interior of the switchgear cabinet, which are provided with at least one row of fastening receivers cut at even distances, wherein the fastening receivers are embodied as slit-shaped holes, whose clear opening width in the longitudinal direction of the frame section is greater than the clear opening width transversely to the longitudinal direction, characterised in that a further profiled side embodied as an interior wall, is connected at right angles with the interior walls, and the interior walls and the profiled sides are provided with rows of fastening receivers.

The longitudinally oriented slit-shaped fastening receivers affect the stiffness, in particular the distortion resistance, of the frame section only slightly. Because the fastening receivers extend in the longitudinal direction of the frame section, a stable attachment of built-ins is possible. Fastening elements of a structural height, which is matched to the clear opening width in the longitudinal direction of the frame section, can be supported in the fastening receivers. Because a large opening

width is provided, the fastening elements can also have a correspondingly massive dimension in the longitudinal direction of the frame section. The main load axis when attaching built-ins now extends along the frame section in such a way, that the fastening element introduced into the fastening receiver can optimally absorb the occurring load.

Therefore the result is a frame section with which a high degree of stiffness is achieved by means of the special dimensioning of the fastening receivers. The solid attachment of built-ins on the fastening receivers is also possible reciprocally with this.

When dimensioning the fastening receivers, the clear opening width of the fastening receivers in the longitudinal direction of the frame section should be at least twice as large as the opening width transversely to the longitudinal direction. The most diverse fastening elements can be fixed in place in the fastening receivers. The employment of hook-shaped fastening elements is advantageous. Mounting rails can be used as built-ins, for example. These are bent from sheet metal. In this case the hook-shaped fastening element is punched out of the sheet metal. The clear opening width transversely to the longitudinal direction of the frame section is then matched to the thickness of the sheet metal. It is therefore possible to provide a simple and cost-effective connecting mechanism by means of the slit-shaped fastening receivers.

A preferred variation of the invention provides that two interior walls, which extend at right angles to each other, face the interior of the switchgear cabinet, that a further profiled side embodied as an interior wall is connected at right angles with the interior walls, and that each one of the interior

walls/profiled sides is provided with a row of fastening receivers. A plurality of fastening possibilities is provided by this frame section, which can be used depending on the space availability in the interior of the switchgear cabinet. It has been achieved in particular, that one profiled side is always parallel in relation to an interior wall. This results in two levels of fastening, which extend parallel with each other. The number of attachment possibilities for built-ins can also be increased in a simple manner in that the interior wall facing the interior of the switchgear cabinet is respectively provided with at least one further row of fastening receivers, and that the rows of fastening receivers extend parallel in respect to each other. It is conceivable in connection with a rack put together from the frame legs in accordance with the invention, that the horizontal frame sections, which form a bottom frame and a cover frame, are provided with two rows of fastening receivers on the interior wall extending vertically in respect to the side of the rack, wherein at least the row of fastening receivers facing the side of the rack forms the slit-shaped holes, and that these rows of fastening receivers make a transition into the rows of fastening receivers of the vertical frame sections. Because the rows of fastening receivers of the horizontal frame sections make a transition into those of the vertical frame sections, built-ins can be fastened in the corners. It is of particular advantage if the fastening receivers make the transition into each other in a grid layout.

The invention will be explained in greater detail in what follows by means of an exemplary embodiment represented in the drawings. Shown are in:

Fig. 1, a rack for a switchgear cabinet, consisting of frame sections, in a perspective lateral view, and

Fig. 2, a detailed representation of a corner area of the rack in accordance with Fig. 1.

A rack for a switchgear cabinet is represented in Fig. 1. The rack is essentially put together from a bottom frame 10 and a cover frame 20 and four vertical frame sections 40. The vertical frame sections 40 connect the bottom frame 10 with the cover frame 20. The bottom frame and cover frame 10 and 20 are identically constructed, so that they can be interchanged.

The bottom frame and cover frame 10 and 20 each have four horizontal frame sections 21, 22, which are arranged at right angles in respect to each other. On their interior walls facing the interior of the rack, the frame sections 21, 22 are provided with rows of fastening receivers 23, 24, 24.1. The vertical frame sections 40 are also provided with fastening receivers 45, 46, which are facing the interior of the rack. Threaded receivers 24.2, or respectively 44, are arranged between the individual fastening receivers 23, 24, 24.1, 45, 46.

The vertical frame sections 40 are connected with the bottom, or respectively cover frame 10, 20 by means of connectors 30. The connectors 30 are arranged in the area of corner receivers 25 of the bottom, or respectively cover frame 10, 20. Screw connections or welds, for example, are provided for fastening the vertical frame sections 40 on the connector 30.

A corner area of the rack in accordance with Fig. 1 is shown in greater detail in Fig. 2.

This representation shows that the two horizontal frame sections 21, 22 are identically constructed. Facing the interior of the rack, the two interior walls 25.1, 25.2 are connected at right angles to each other. The horizontal, upward facing interior wall 25.1 makes a transition into a bevel 26. The bevel

26 extends parallel with the side of the rack. Lateral walls or a cabinet door can be placed against it with a seal put between them. The bevel 26 makes a transition into two exterior walls 27, which are also placed at right angles to each other. In this way the exterior walls 27 are arranged parallel in respect to the interior walls 25.1, 25.2. A bevel of the lateral wall, or respectively of the cabinet door, can be received in the area formed by the setoff of the two exterior walls 27. The vertical exterior wall 27 is connected with the vertical interior wall 25.2 via the bottom 28, so that a closed hollow profile results for the horizontal frame sections 21, 22.

The vertical interior wall is provided with a row of fastening receivers 23. The fastening receivers 23 are embodied as holes of essentially rectangular cross section. Two rows of fastening receivers 24, 24.1 are provided on the upward facing horizontal interior wall. The two rows of fastening receivers extend parallel with each other in the longitudinal direction of the frame section 21, 22. While the fastening receivers 24 located on the inside are identical to the fastening receivers 23 of the vertical interior wall 25.2, the fastening receivers 24.1 are embodied to be slit-shaped. These slit-shaped fastening receivers 24.1 have a clear opening width in the longitudinal direction of the frame sections 21, 22 which is greater than the opening width transversely to the longitudinal direction. Threaded receivers 24.2 are respectively arranged between the individual fastening receivers 23, 24, 24.1. The threaded receivers 24.2 are stamped out in their untrimmed shape, into which tapping screws can be screwed.

The horizontal frame sections 21, 22 are connected at right angles to each other and constitute the corner receiver 25, which

is open toward the outside. The vertical frame section 40 has been placed against the connector 30 in this corner receiver 25.

The vertical frame section 40 has four interior walls 41, 42. The interior walls 41 are at right angles to each other and constitute an interior receiver facing the interior of the rack. Vertically extending mounting rails can be fastened in this interior receiver. The two interior walls 42, which are embodied as profiled sides, are connected at right angles to the two interior walls 41. These interior walls 42 also extend at right angles with the sides of the rack. Each one of the interior walls 41, 42 is provided with a row of fastening receivers 45, 46. These fastening receivers 45, 46 are also embodied in a slit-shaped manner, the same as the fastening receivers 24.1 of the horizontal frame sections 21, 22, wherein the main direction of extension runs in the longitudinal direction of the frame section 40. On the exterior of the rack, the interior walls 42 terminate flush with the interior walls 25.1 of the horizontal frame sections 21, 22. Since the fastening receivers 24.1 of the horizontal frame sections 21, 22 and the fastening receivers 45 of the vertical frame sections are spaced apart at the same distance from the sides of the rack, they transition into each other. Therefore a circumferential fastening frame results. The fastening receivers 24 can transition in the same way into the fastening receivers 46 of the interior wall 41.

As can be easily seen from the drawings, a small structural size of the individual frame sections 21, 22, 40 can be realized by means of the narrow fastening receivers 24.1, 45, 46. Also, the fastening receivers 24.1, 45, 46 hardly weaken the frame sections 21, 22, 40, so that the latter have great rigidity. At the same time it is possible to fasten built-ins solidly on the

fastening receivers 24.1, 45, 46. A large degree of flexibility is provided by the multitude of fastening possibilities for the attachment of built-ins in the interior of the switchgear cabinet. It is in particular possible to form two vertical fastening levels one behind the other with the four interior walls 41, 42 of the vertical frame sections 40 in the direction of the one horizontal frame section 21, as well as the other 22. In this case the fastening levels are respectively constituted by one interior wall 41 and a further interior wall 42.

CLAIMS

1. A frame section for a rack of a switchgear cabinet with two interior walls at right angles with each other and facing the interior of the switchgear cabinet, which are provided with at least one row of fastening receivers cut at even distances, wherein the fastening receivers are embodied as slit-shaped holes, whose clear opening width in the longitudinal direction of the frame section is greater than the clear opening width transversely to the longitudinal direction,

characterised in that

a further profiled side embodied as an interior wall, is connected at right angles with the interior walls, and

the interior walls and the profiled sides are provided with rows of fastening receivers.

2. The frame section in accordance with claim 1, characterised in that

the clear opening width of the fastening receivers of the frame is at least twice as large as the opening width transversely to the longitudinal direction.

3. The frame section in accordance with claim 1 or 2, characterised in that

the interior wall facing the interior of the switchgear cabinet is respectively provided with at least one further row of fastening receivers, and

the rows of fastening receivers extend parallel in respect to each other.

4. A rack for a switchgear cabinet with vertical and horizontal frame sections, wherein the frame sections two interior walls at right angles to each other and facing the interior of the rack, which are provided with at least one row of fastening receivers cut in at identical distances from each other, wherein the fastening

receivers are designed as slit-shaped holes, whose clear opening width in the longitudinal direction of the frame sections is greater than the clear opening width transversely to the longitudinal direction,

characterised in that

a further profiled side embodied as an interior wall, is connected at right angles with the interior walls, and

the interior walls and the profiled sides are provided with rows of fastening receivers.

5. The frame section in accordance with claim 4, characterised in that

the horizontal frame sections, which form a bottom frame and a cover frame, are provided with two rows of fastening receivers on the interior wall extending vertically in respect to the side of the rack, wherein at least the row of fastening receivers facing the side of the rack forms the slit-shaped holes, and

these rows of fastening receivers make a transition into the rows of fastening receivers of the vertical frame sections.

6. A frame section for a rack of a switchgear cabinet, said frame section being substantially as herein described with reference to the accompany drawings.

Dated this 26th day of October 2000

RITTAL-WERK RUDOLF LOH GMBH & CO. KG.

By their Patent Attorneys
GRIFFITH HACK

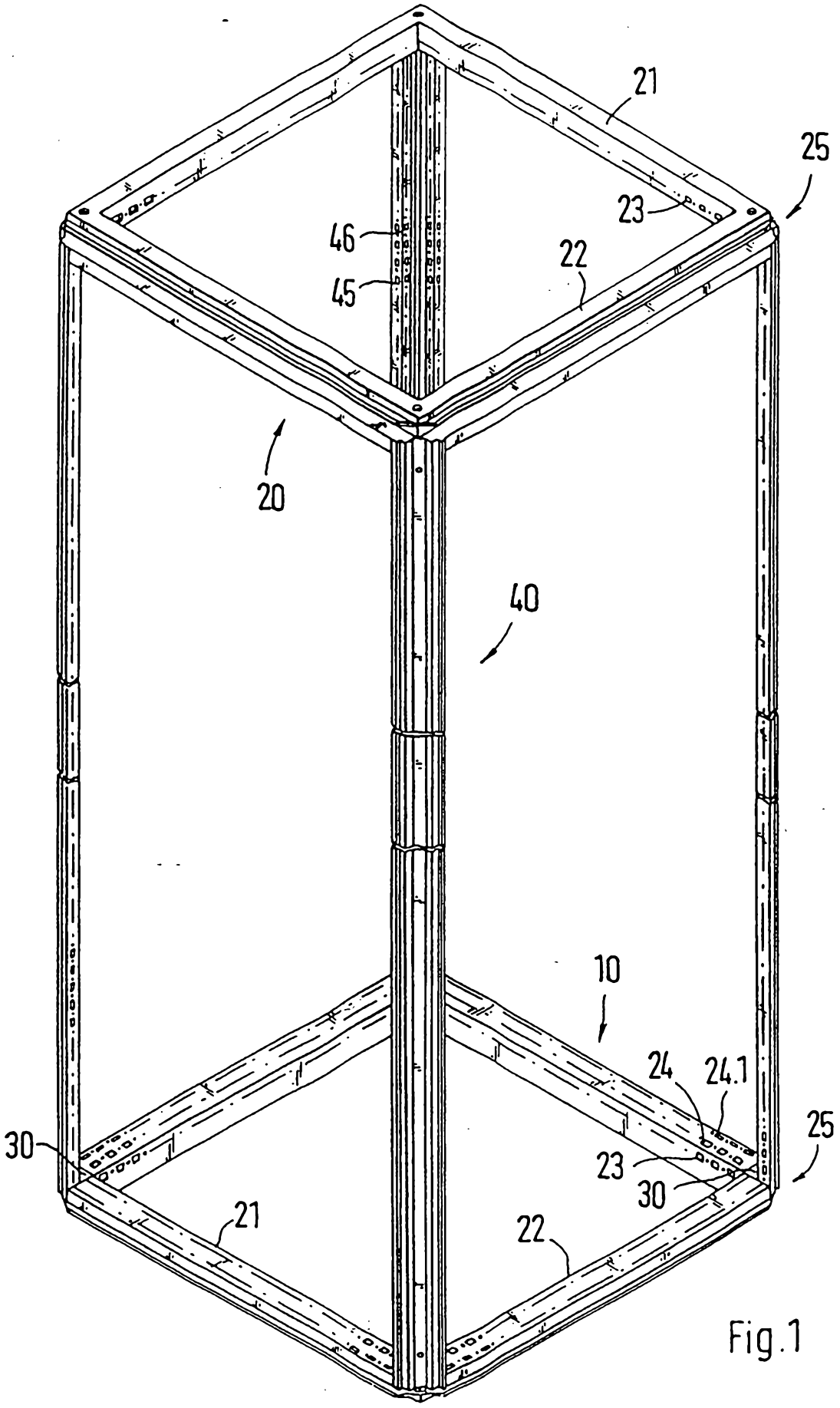


Fig.1

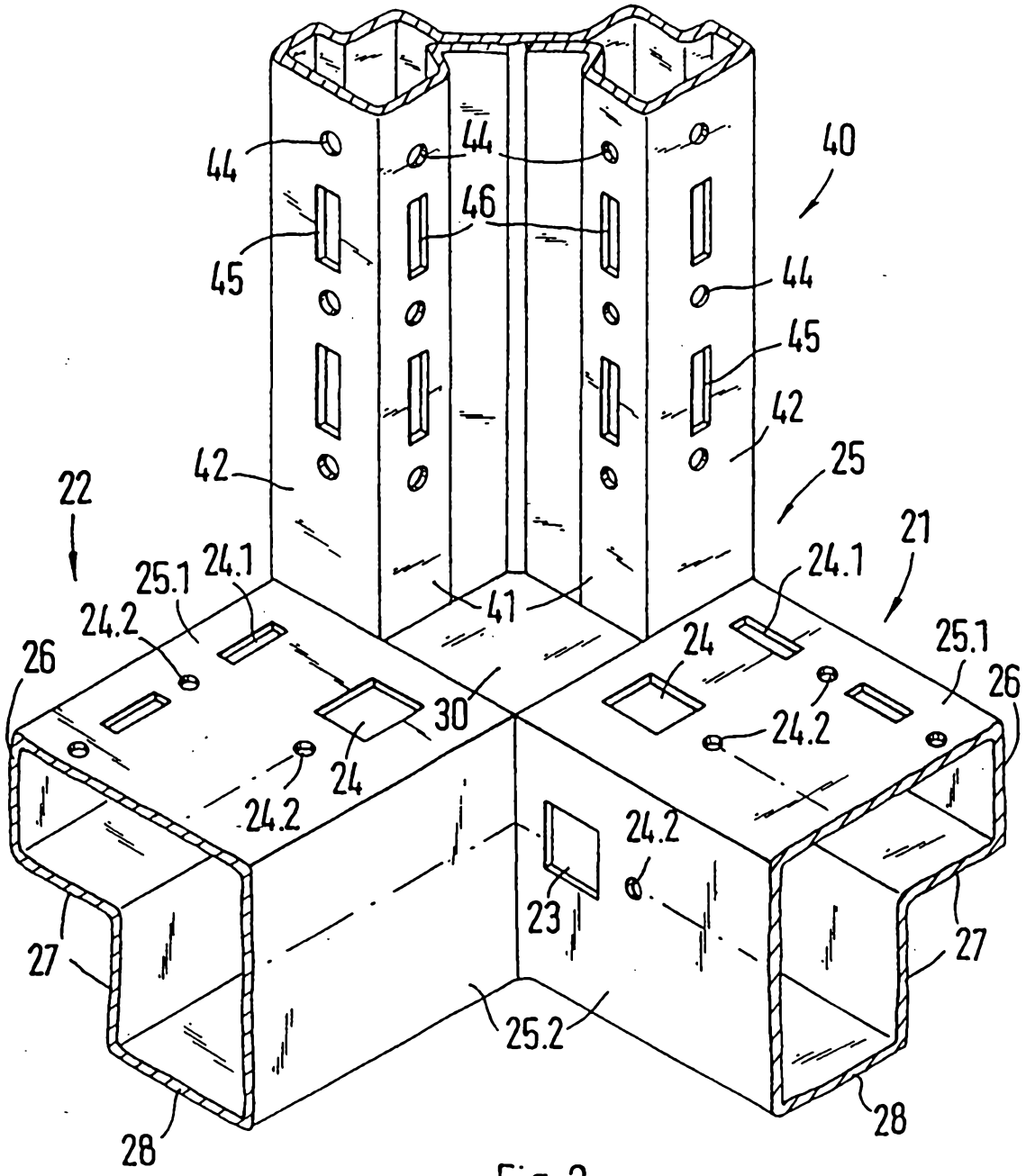

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Fig.2