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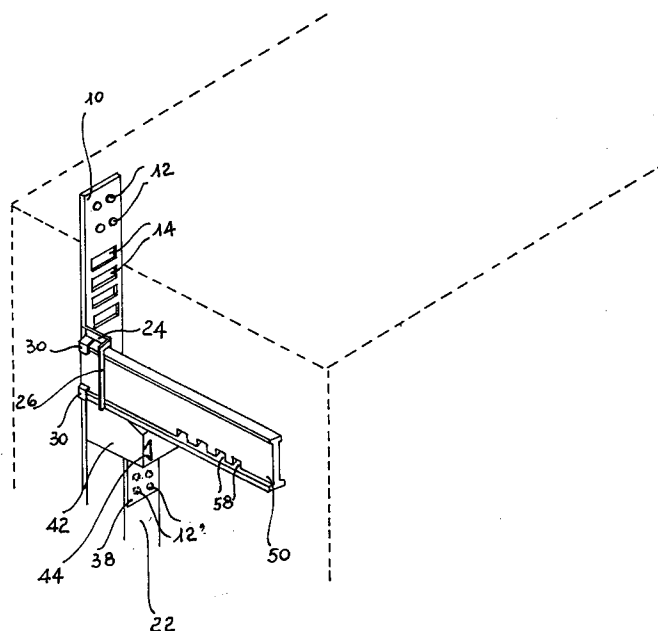
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I-20123 Milano (IT)(54) **Support and constraint device for a roller shutter box assembly with shutter.**

(57) A support and constraint device for a roller shutter box assembly with shutter comprises a plate (10) with projections (12) and slots (14) and a block (16) with front projections (40) designed to be inserted in said slots in which they are clamped by a fork (60) and a section bar (50). The plate (10) has a crosspiece (24) projecting orthogonally whose front face defines an opening (28) for engagement of the section bar (50) guided along the crosspiece by

opposing teeth (30) formed like a square. With the block (16) is coupled a cursor (36) with a lower extension (38) having on its inner face projections (12'). Said projections (12') together with the projections (12) coincide with the holes (20) formed in the sides of a channel constituting the roller shutter guide and constrained thereto. The section bar (50) projects orthogonally to form the rigid support for a roller shutter box assembly with shutter roller.

fig. 2**EP 0 652 350 A1**

The present invention relates to a support and constraint device for a roller shutter box assembly with shutter.

More specifically the present invention relates to a device especially suitable for being employed to support and constrain a roller shutter box assembly consisting of the shutter roller and related heads bearing the operating elements.

Known roller shutters used as closing devices for windows and door windows are constrained to a roller on which they are wound or from which they are unwound by means of various manual or electrical systems and run along guides arranged vertically in the sides of the openings formed in the wall.

The assembly consisting of the winding roller, the related end supports, roller shutter operation means and the roller shutter itself make up the so-called roller shutter box assembly whose installation in the window or door window opening involves a series of laborious operations.

The elements making up the above mentioned roller shutter box assembly must first of all be assembled to form a single structure which must then be constrained to the wall safely and permanently. For this purpose metal brackets are used and connected by screws and tierods to the slide guides of the roller shutter and usually installed in advance in the wall. Sometimes it is necessary depending on the size of the roller shutter to use additional tierods or stiffening plates for the assembly.

These are operations conventionally performed entirely at the work site and include preliminary assembly of the roller shutter box and thus require time in addition to skill for execution. Connection of the brackets to the slide guides requires the use of specific constraining means, e.g. screws, which are engaged in the holes made in said guides. In some cases special adjustments are necessary depending on size and orientation of said brackets.

By a separate and simultaneous patent application this applicant seeks to obviate the first series of shortcomings mentioned above by providing a roller shutter box assembly which could advantageously be preassembled and then installed enbloc in the window or door window opening.

The purpose of the present invention is to obviate the above mentioned shortcomings as regards permanent fastening of a preassembled roller shutter box assembly in the window or door window opening.

More specifically, the purpose of the present invention is to provide a quick support and constraint device for roller shutter boxes including the shutter such that it would not require laborious operations for the definitive housing of said assembly in the upper part of the window or door window

opening.

Another purpose of the present invention is to provide a support and clamping device as set forth above suitable for assembly with various types of shutter slide guides regardless of their cross section.

Another purpose of the present invention is to provide a device allowing easy support and constraint of roller shutter box assemblies of any type including a rigid anchoring arm emerging from each of the shutter slide guides.

Another purpose of the present invention is to provide a support and constraint device for roller shutter box assemblies with shutter capable of ensuring a high degree of reliability and resistance over time such as to be easy and economical to produce and install.

These and other purposes are achieved by the support and constraint device for a roller shutter box assembly with shutter which is the object of the present invention and which, being made of metal or other suitable material, is basically characterised in that it comprises a plurality of elements mating together and along the external walls of each of the shutter slide guides consisting of a plate with pairs of slightly projecting cylindrical projections on one face and located over quadrangular slots delimited above and below by projections and an orthogonal side extension formed of a crosspiece which on its front face defines an opening for guiding and constraint of the front portion of a section, a block with two or more front projections complementary to said slots, clamping means for the projections projecting from the rear of said slots and a cursor sliding horizontally along the block, and provided with a lower extension on the front face of which are achieved analogous pairs of cylindrical projections.

To clarify the explanation of the innovative principles of the present invention and its advantages compared with the known art there is described below with the aid of the annexed drawings a possible embodiment by way of nonlimiting example applying said principles. In the drawings -

FIG. 1 shows diagrammatically an exploded view of a support and constraint device which is the object of the present invention,

FIG. 2 shows diagrammatically a perspective view of the device of FIG. 1 applied to and integral with a slide guide for the roller shutter, and

FIG. 3 shows diagrammatically an exploded view of a variation of the support and constraint device.

With reference to the figures the support and constraint device for a roller shutter box assembly with shutter which is the object of the present invention achieved in metal or other suitable material consists basically of a plate 10 with projec-

tions 12 and slots 14, a block 16 with front projections 40 designed to be inserted in the slots 14 and a section bar 50, e.g. with an H cross section, designed to engage orthogonally with the plate 10.

The plate 10 is rectangular and thin and has on one face a plurality of pairs of projections or slightly projecting cylindrical imprints 12 achieved preferably in the upper and lower portions. Said projections are spaced horizontally and vertically in such a manner as to correspond with the holes 20 created along the opposing faces of the channels which form the slide guides of the roller shutter and indicated by reference number 22 and of known type. Along the plate 10 is also created in the portion included between the projections 12 a plurality of identical slots 14 in a vertical row and slightly spaced and e.g. rectangular. On one side of the plate 10 extends orthogonally towards the face along which are formed the imprints 12 a quadrangular crosspiece 24 of limited length and height. The front end of said crosspiece bears an integrated plate 26 with rectangular through opening 28. The plate 26 extends orthogonally to the crosspiece 24 outwardly from the plate 10. Aligned with the plate 26 are formed on the same crosspiece two opposing teeth 30 in square form which define a sliding compartment whose configuration and size are substantially equivalent to those of the opening 28 formed in the plate 26. Between the teeth 30 and the plate 26 is created by partial shearing an elastic spring 32 on the crosspiece 24. To the plate 10 is connected a block 16 made up of an angular element 34 to which is coupled in a sliding manner a cursor 36 with lower extension 38. Said angular element has on its front face a pair of projections 40 having a configuration complementary to that of the slot 14 in the plate 10 and sides slightly lower than its most advanced face. The side wall 42 of the angular element 34 has on its inner face a slightly projecting swallow tail segment 44. Said segment extends parallel to the lower edge of the wall 42 for a limited distance and constitutes the guide and slide member for the cursor 36 coupled to the angular element 34. Said cursor consists in accordance with a preferred embodiment of a tubular body with quadrangular cross section and limited extension on whose inner face is formed a milling complementary to the swallow tail shape segment 44. With the lower base of the cursor 36 is integral an extension 38 consisting of a plate of width substantially equivalent to that of the plate 10 and of length considerably less than same. Said plate has on its front face turned towards the projections 40 of the angular element 34 at least two pairs of projections identical with those formed on the plate 10 and shown in broken lines by reference number 12' in FIG. 2 and spaced horizontally and vertically in the same manner as the

above to correspond exactly with the holes formed along the slide guide 22 of the roller shutter.

With the same lower base of the cursor 36 is also integral a tab 46 arranged at the front of and parallel with the plate 38. The distance between the latter and the tab mentioned is slightly greater than the thickness of the side walls of the guide 22 with holes 20. The support and constraint device of the present invention also comprises a section bar 50 designed to be constrained to the plate 10 and a fork 60 designed to clamp the block 16 against the plate 10. Said section bar has preferably an H cross section whose maximum height and width are equivalent excepting the tolerances for mating with the opening 28 of the crosspiece 24 and the internal distance between the teeth 30 formed on said crosspiece. Said dimension of the section bar is advantageously limited to its front portion 52 which extends for a distance substantially equivalent to the width of the crosspiece 24. In its remaining part the section bar 50 has a slightly larger cross section extending from at least one of its faces and defining a step 54 which strikes an edge of the plate 26.

At its front end the section bar 50 has a through opening 56 designed to receive the elastic spring 32 created on the crosspiece 24. Said section bar has a plurality of opposing slots 58 achieved along its central portion adjacent to its opposed parallel flanges. Said slots are formed e.g. in the central rear part of the section bar and constitute a corresponding number of alternative anchoring points for the heads of a roller shutter box assembly to be coupled with the support device which is the object of the present invention.

The fork 60 has a width e.g. analogous to that of the plate 10 and has a substantially rectangular central opening 62 extending vertically and whose breadth corresponds to that of the projections 40 of the block 16 in its most rearward lower portion.

FIG. 3 shows diagrammatically an alternative and simplified embodiment of the support and constraint device of the present invention.

Said device comprises analogously to the embodiment described above a plate 10', a block 16' with cursor 36' and lower extension 38' with cylindrical projections on its inner face and a section bar 50 and is particularly suited to being coupled with conventional roller shutter channel slide guides 22' with pairs of vertical rows of holes 20'' along the sides and having on the face opposite the open face a longitudinally extending compartment with rectangular cross section.

Said compartment, indicated by reference number 22'' in FIG. 3, is achieved upon formation of the guides.

The plate 10' is of substantially rectangular shape and has a width and thickness slightly less

that the corresponding dimensions of the compartment 22" of the guide 22' and has on one side a plurality of equidistant grooves 14' in a vertical row achieved e.g. by shearing. The opposing side of the plate 10' and preferably along the median portion has a quadrangular plate 26' with rectangular through opening 28'. The plate 26' extends orthogonally from the plate 10' towards the front face thereof. Aligned with the plate 26' are formed on said front face of the plate 10' two opposing square-shaped teeth 30' which define a slide compartment having a configuration and size substantially equivalent to those of the opening 28' of the plate 26'.

Between the teeth 30' and the plate 26' is created on the plate 10' by partial shearing an elastic spring 32'. The block 16' is analogous with the block 16 of the preceding embodiment and is made up of an angular element 34' to which is coupled in a sliding manner a cursor 36' with lower extension 38'. On the front part of the side wall 42' of the angular element 34 is formed a pair of aligned projections 40' of substantially parallelepiped shape. The height and length of said projections are slightly less than the corresponding dimensions of the grooves 14' of the plate 10' while the depth of said projections is preferably at least equal to the thickness of the plate 10'.

The support and constraint device of the present invention in conformity with the alternative embodiment comprises also a section bar 50' identical to the section bar 50 of the preceding embodiment and has in its more advanced portion a through slot 56' and opposing slots 58' in its centre rear part.

Assembly of the components of the support and constraint device which is the object of the present invention is done with rapid operations after which the device is simultaneously constrained to the slide guide 22 of the roller shutter.

With reference to the first embodiment the plate 10 is rested on one side of the slide guide 22 in such a manner that the projections 12 or parts thereof engage in the corresponding holes 20 of said guide. The crosspiece 24 which extends orthogonally from the plate 10 rests on the undrilled front wall of the guide 20. The block 16 is then brought near the plate 10 to allow engagement of the projections 40 in the slots 14 of said plate. The fork 60 is fitted on said projections which project from the rear of said plate and clamp the angular element 34 of the block 16 on the plate. Said block is positioned in advance opposite the top end of each of the slide guides 22 in such a manner that the lower tab 46 encounters its internal wall. Simultaneously the cursor 36 which slides along the projecting swallow tail segment 44 is pushed towards the slide guide 22. The lower extension 38

of the cursor 36 then encounters the side wall of the guide opposite that to which is constrained the plate 10. The cylindrical projections formed on the internal face of the extension 38 engage in the corresponding holes created in said side wall of the guide 22.

Along the angular element 34 or along the cursor 36 is advantageously arranged a setscrew or equivalent permitting clamping of the cursor after the projections of the lower extension 38 are engaged in the holes of the side wall of the guide 22.

Following this operation the upper end of the guide 22 has its opposite side walls delimited by the plate 10 and the block 16 respectively rigidly constrained to the guide. The section bar 50 is then engaged with its lowered front end 52 in the opening 28 formed on the plate 26 of the crosspiece 24. The step 54 formed on the section bar 50 strikes against the plate 26 while its most advanced part is inserted in the space delimited by the teeth 30 aligned with the opening 28. Simultaneously the elastic spring 32 snaps into and engages in the opening 56 created near the front end of the section bar 50.

Said section bar 40 is thus rigidly constrained to the plate 10 through the crosspiece 24 as diagrammed in FIG. 2 which shows the support and constraint device as a whole entirely assembled and integral with a roller shutter slide guide.

The cursor 36 of the block 16 can be advanced to a greater or lesser extent along the projecting swallow tail segment 44 depending on the cross section of the channel making up the roller shutter slide guide 22. The block can be arranged at any height along the slots 14 of the plate 10 depending on installation requirements and space occupied by other components which make up the roller shutter box assembly advantageously constrainable to the device which is the object of the present invention.

The latter assembled in its components and integral with each of the slide guides 22 has the section bar 50 projecting toward the window or door window opening indicated in broken lines in FIG. 2. Said section bar constitutes a rigid support or arm to which can be easily coupled e.g. with a sliding engagement the head of a roller shutter box assembly constrained to the shutter roller.

With reference to the second embodiment the plate 10' is inserted in the compartment 22" of the guide 22' from the upper end of said guide. Simultaneously the block 16' is brought near the internal face of the plate 10' in such a manner that the pair of projections 40' of the block 16' engage in two of the grooves formed on the side of the plate. The cursor 36' of the block 16' is pushed towards the side of the guide 22'. The cylindrical projections on the internal face of the lower extension

sion 38' of the cursor engage in the corresponding holes 20' present on said side of the guide 22'. The cursor 26' is then clamped against sliding by a setscrew or equivalent means in a manner analogous to that of the cursor 36 of the former embodiment. The plate 10' under these conditions is permanently connected to the guide 22' and held by a block 16'. Depending on the hooking of the projections 40' in the upper or lower grooves 14' the plate projects from said guide to a greater or lesser extent depending on installation requirements and space occupied by the other components which make up the roller shutter box assembly. The section bar 50' is then engaged in the opening 28' of the plate 26' and its most advanced part is guided by the teeth 30' aligned with said opening. The elastic spring 32' formed on the plate 10' snaps into and engages in the opening 56' of the section bar 50' clamping it in position.

Even in this alternative embodiment the section bar 50' constitutes a rigid support or arm to which can be constrained the head of a roller shutter box assembly integral with the shutter roller.

As may be seen from the foregoing the advantages of the present invention are evident.

In both the proposed embodiments the device which is the object of the present invention allows provision easily and rapidly of a steady support for a roller shutter box assembly with shutter. The components of the device can be assembled without complicated operations and form a single rigid and permanent block with each of the slide guides 22 or 22' of the roller shutter.

Particularly advantageous is the fact that the device can be applied to various types of channels forming the slide guide 22 or 22' of the roller shutter given the adjustability of the proximity of said guide offered by the cursor 36 or 36' of the block 16 or 16'.

Naturally the above description of an embodiment applying the innovative principles of the present invention is given merely by way of example and therefore is not to be taken as a limitation of the patent right claimed here.

For example and in particular relocation or alternative configurations of the elements making up the entire support and constraint device which is the object of the present invention would be possible.

Claims

1. Support and constraint device for a roller shutter box assembly with shutter and achieved in metal or other suitable material and characterised in that it comprises a plurality of elements mating together and along the external walls of each of the slide guides (22) of a

shutter and consisting of a plate (10) with pairs of slightly projecting cylindrical projections (12) on one face and vertical rows of quadrangular slots (14) delimited above and below by projections (12) and an orthogonal side extension formed of a crosspiece (24) which on its front face defines an opening (28) for guiding and constraint of the front portion (52) of a section bar (50), a block (16) with two or more front projections (40) complementary to said slots (14), clamping means (60) for the projections (40) projecting from the rear of said slots and a cursor (36) sliding horizontally along the block (16) and provided with a lower extension (38) on the front face of which are achieved analogous pairs of cylindrical projections (12').

2. Support and constraint device for a roller shutter box assembly with shutter and achieved in metal or other suitable material and characterised in that it comprises a plurality of elements mating together and along the external walls of each of the slide guides (22') of a shutter and a longitudinal compartment (22'') with rectangular cross section and pairs of vertical rows of holes (20') along its opposing sides and said elements consisting of a plate (10') with vertical rows of equally spaced grooves (14') on one side and a quadrangular plate (26') for guiding and constraint of a section bar (50') extending orthogonally on the opposite side and having a rectangular through hole (28'), a block (16') and vertical rows of projections (40') complementary to said grooves (14') formed on the front of the side wall (42') and a horizontally sliding cursor (36') with lower extension (38') on the front face of which are achieved pairs of slightly overhanging cylindrical projections.
3. Support device in conformity with claim 1 characterised in that the projections (12), (12') of the plate (10) and the lower extension (38) or (38') of the cursor (36) or (36') are spaced horizontally and vertically and correspond with holes (20), (20') formed on the opposite faces of each of the slide guides (22), (22'), which are made of channel, of the roller shutter.
4. Support device in conformity with the above claims characterised in that along the crosspiece (24) or on the plate (10') are achieved opposing projecting square-shaped teeth (30), (30') whose internal portions are aligned with the opening (28), (28') and an elastic spring (32), (32') projecting towards said teeth.

5. Support device in conformity with the above claims characterised in that the projections (40) formed on the block (16) have opposed lowered and straight segments at their front portion in contact with said block along which are fitted said clamping means (60) consisting of a fork which meets with the outer face of the plate (10). 5

6. Support device in conformity with the above claims characterised in that the block (16), (16') consists of an angular element (34), (34') whose side wall (42), (42') on an internal face has a slightly projecting segment (44) extending horizontally and shaped like a swallow tail and along which there engages in a sliding manner the cursor (36) or (36') with lower extension (38) or (38') having a milling complementary to that of said segment (44) and slide stop means consisting of a setscrew or equivalent. 10
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7. Support device in conformity with the above claims characterised in that the section bar (50) has an H cross section with lowered front portion (52) on at least one side and a through opening (56) near the front end and complementary to the spring (32) or (32'). 25

8. Support device in conformity with the above claims characterised in that on the front of the lower extension (38) of the cursor (36) is formed a tab (46) which meets the internal wall of one of the faces of the slide guide (22). 30
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9. Support device in conformity with the above claims characterised in that the section bar (50) arranged at right angles to the plate (10) or (10') has along its extension two or more opposing slots (58), (58') formed along its central segment and adjacent to the side portions. 40

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fig. 1

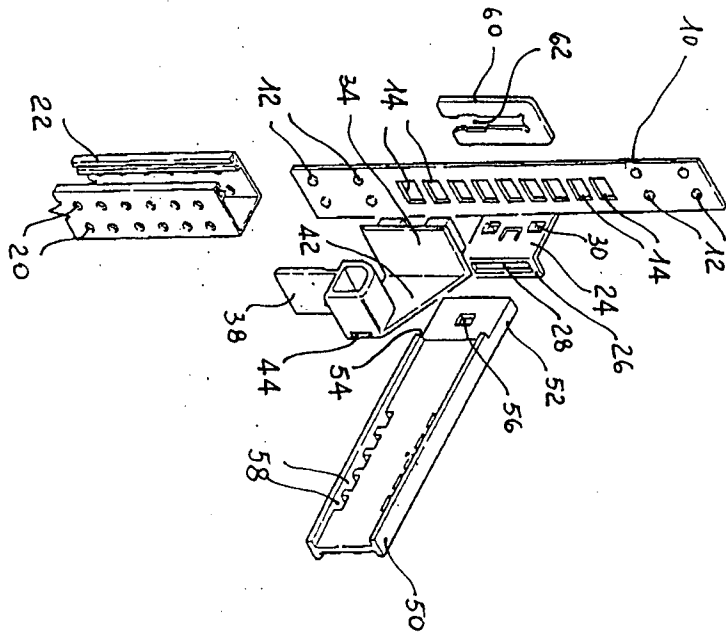
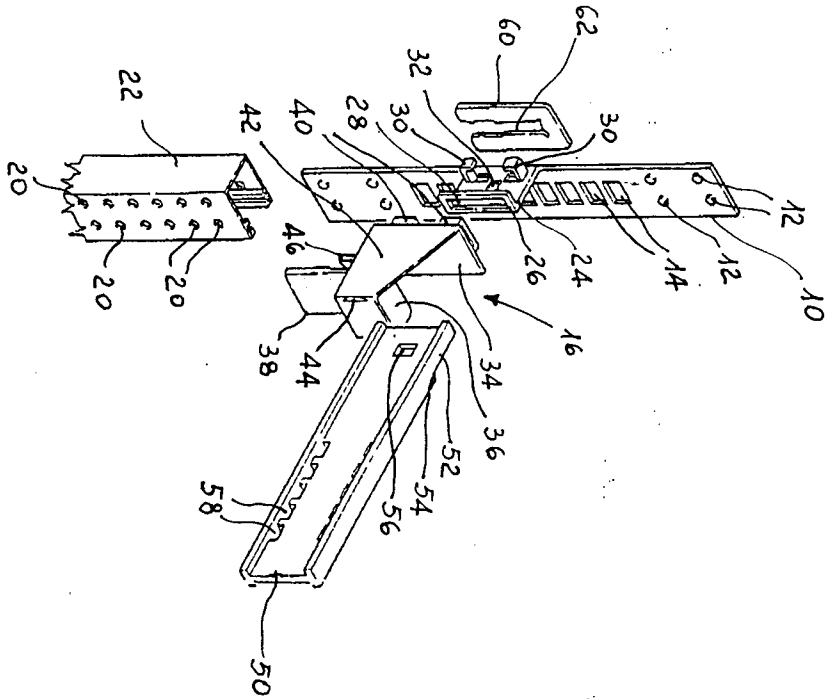
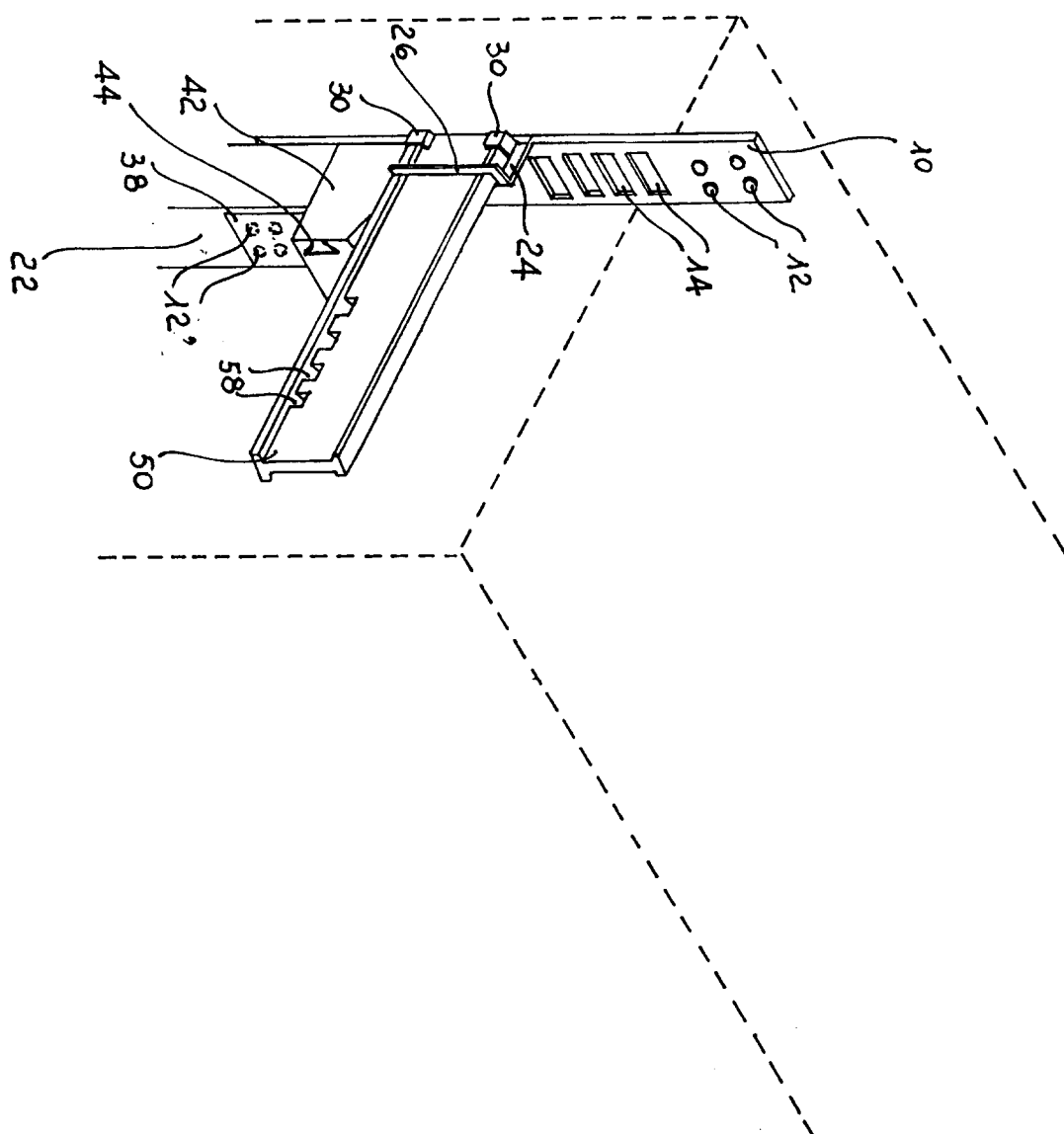
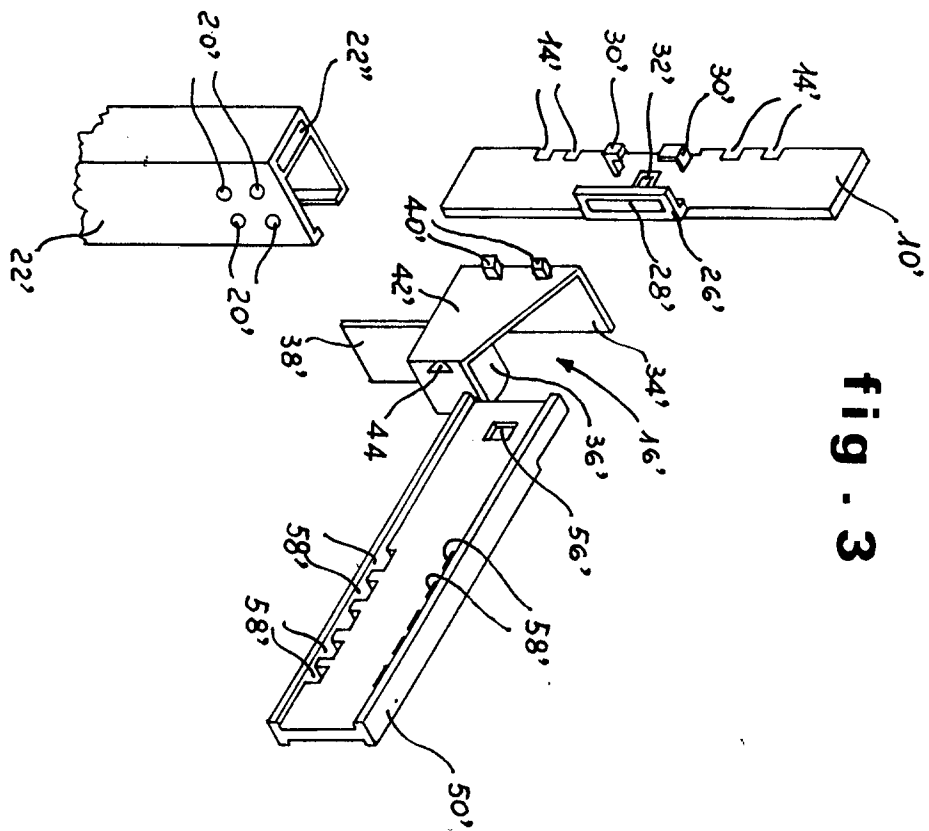


fig. 2







European Patent
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EUROPEAN SEARCH REPORT

Application Number
EP 93 83 0447

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.6)
A	DE-A-15 09 228 (BRENNSTUHL) * the whole document * ---	1-9	E06B9/00 E06B9/17
A	US-A-4 930 563 (FINCH ET AL.) * column 4, line 51 - column 7, line 2; figures 5-10 * ---	1-9	
A	FR-A-2 635 141 (CARRETIER) * the whole document * ---	1-9	
A	FR-A-1 407 067 (SANTANGELETTA) * the whole document * -----	1-9	
			TECHNICAL FIELDS SEARCHED (Int.Cl.6)
			E06B
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 14 April 1994	Examiner Kukidis, S
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