

Sept. 20, 1971

Y. DIDRY

3,606,411

FIXING ARRANGEMENTS

Filed Oct. 24, 1968

3 Sheets-Sheet 1

FIG. 1A

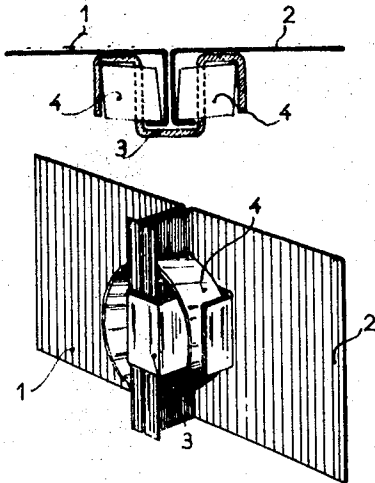


FIG. 1

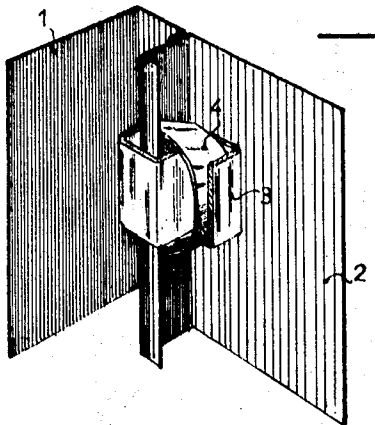


FIG. 3

FIG. 2A

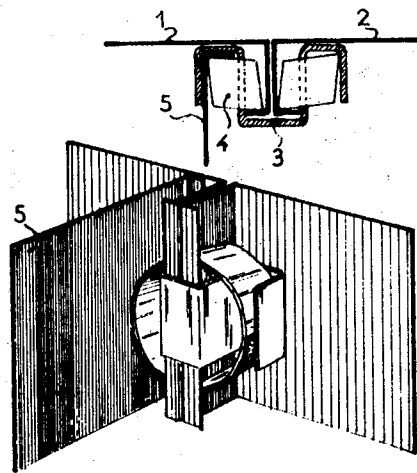


FIG. 2

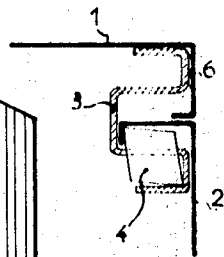


FIG. 3A

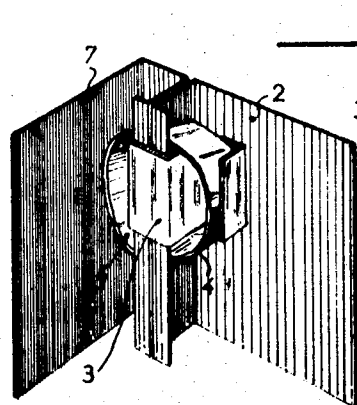


FIG. 4

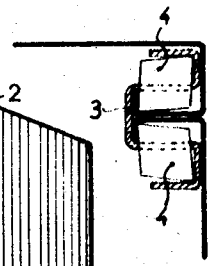


FIG. 4A

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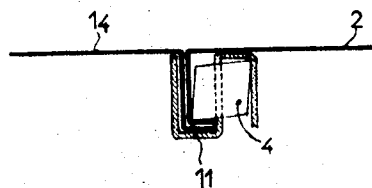
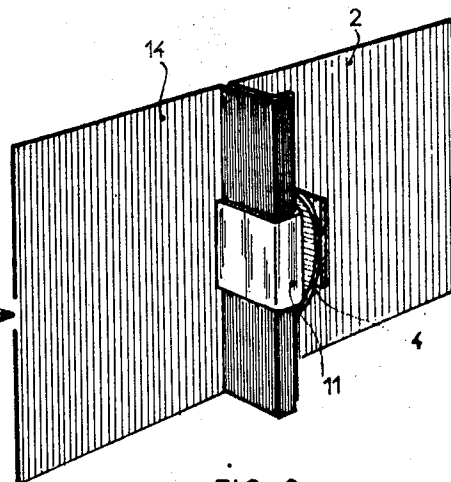
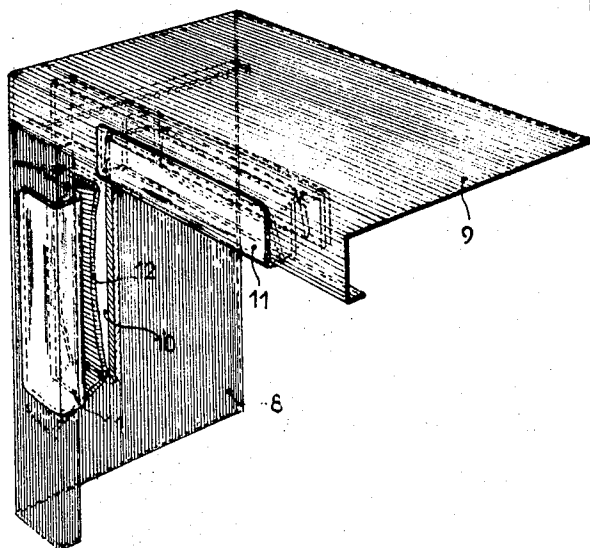
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FIG. 8

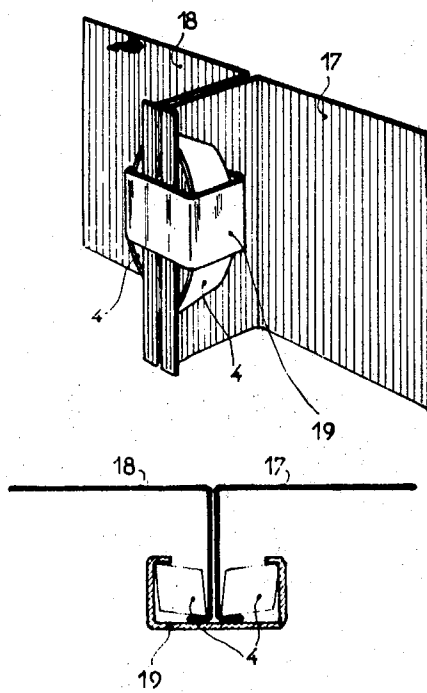


FIG. 8A

FIG. 7

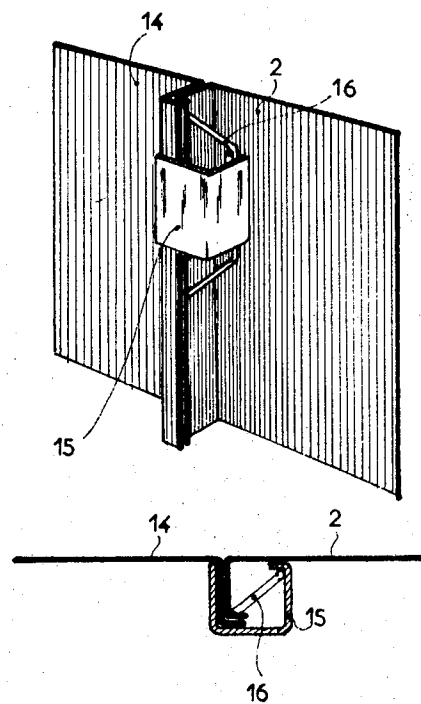


FIG. 7A

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126,021
Int. Cl. F16b 5/06
U.S. Cl. 287—189.36

6 Claims

ABSTRACT OF THE DISCLOSURE

Two or more cooperating bent edges of a plurality of sheet metal or the like members are releasably assembled through the use of a single or multi-channeled stirrup member which straddles the bent edge portions of the sheet members to be joined. A resilient flexible clip is positioned against one side wall of the stirrup device within one of the channels so as to biasingly engage the bent edge portion of an associated sheet member thereby forcing it into abutting assembled relationship with a cooperating bent edge portion of a similar sheet member which may be arranged in common or perpendicular plane. The stirrup device may have one or more channel members dependent upon the shape and position of the sheet members relative to one another and upon the number of clips necessary to provide a biasing force on the bent edge portions of the sheet members so as to maintain them in assembled abutting relationship.

This invention relates to a facility for the releasable assembly of two sheet-metal members whose juxtaposed bent edges are straddled by a stirrup clipped in position, the facility being distinguished by the combination of an appropriate shaped stirrup with one or two clips of the kind which can compensate for dimensional tolerances and which connect the stirrup to one or both of the sheet-metal members.

Using a facility of this kind, which does not damage the assembled sheet-metal members in any way, assembly and disassembly can proceed in situ very rapidly and without tools and without previous adjustments, so that the elements can be transported prior to assembly in a very small bulk and without any need to crimp the sheet-metal members with auxiliary section members, thus providing a very low-cost solution to the problem of providing assemblies using sheet-metal members.

Details of the invention will be disclosed by the description, reference being made to the accompanying drawings, wherein:

FIG. 1 is a perspective view, and FIG. 1a a view in horizontal section, showing the assembly of two sheet-metal members in alignment which form the base of a metal furniture item;

FIG. 2 is a perspective view and FIG. 2a a view in horizontal section of the assembly shown in FIG. 1 plus a third sheet-metal member which is perpendicular to the first and which forms a partition in the item of metal furniture;

FIG. 3 is a perspective view and FIG. 3a a view in horizontal section of a corner assembly using two sheet-metal members having the same edge lip;

FIG. 4 is a perspective view and FIG. 4a a view in horizontal section of a corner assembly using two sheet-metal members having different edge lips;

FIG. 5 is a perspective view showing the assembly of a side panel to a top panel;

FIG. 6 is a perspective view and FIG. 6a a view in horizontal section of a variant of the assembly of two aligned sheet-metal members;

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FIG. 7 is a perspective view and FIG. 7a a view in section of two aligned sheet-metal members comprising, as in FIG. 6, edge lips which nest in one another, and with the use of a single-channel stirrup member and a clip made of round or square spring steel known as piano wire, and

FIG. 8 is a perspective view and FIG. 8a a view in section of the assembly of two aligned sheet-metal members having larger edge lips so that clips can be introduced into the single-channel stirrup member from either side of such lips.

Referring to the drawings, two aligned sheet metal members 1, 2 form base elements and have the same edge lip and are dimensioned to receive a three-channel stirrup member 3 whose central channel straddles the two edge lips of the members 1, 2, the two lateral channels each receiving a clip 4 of a kind adapted to take up dimensional tolerances.

In FIG. 2 a partition sheet 5 is introduced into one of the lateral channels before the positioning of the clip 4.

In FIG. 3, the lateral sheet-metal member having the same edge lip as the base sheet-metal member is connected to the three-channel stirrup member 3 by a spot weld 6, assembly being by a single clip 4.

FIG. 4 shows a corner assembly between a lateral sheet-metal member 7 having an extra 90° bend and a base sheet-metal member 2, with the use of the same three-channel stirrup member 3 and two clips 4.

FIG. 5 shows an assembly between a vertical panel 8 and a top panel 9 with the use of an angle-iron whose vertical arm 10 is rigidly secured to the vertical panel 8 by a two-channel stirrup 11, a clip 12 which can take up dimensional differences also being used, the horizontal arm 13 of the angle-iron being rigidly secured to the horizontal panel 9 by a second two-channel stirrup member 11 and a second clip 12 of the same kind as the first clip 12.

FIG. 6 shows the assembly of two panels in alignment with one another; one panel, 2, has the same edge lip as has been shown in the previous drawings, but the other panel 14 has a reversed edge lip in which the edge lip of the member 2 engages, assembly being by means of a two-channel stirrup member 11 and a clip 4.

FIG. 7 shows two sheet-metal members 2, 14 assembled in alignment with one another; the members 2, 14 have edge lips which nest in one another. The assembly uses a single-channel member 15 and a clip 16 made of round or square spring steel stock.

FIG. 8 shows the assembly of two sheet-metal members 17, 18 in alignment with one another, the members 17, 18 having relatively large edge lips for the introduction of securing clips; the assembly also uses a wide single-channel stirrup member 19 and two clips 4 of a kind adapted to take up dimensional tolerances.

What I claim is:

1. A joining stirrup device for assembling a plurality of sheet metal members each having cooperating bent edges positioned in abutting relationship with each other, the stirrup device comprising: angled portions forming at least two channels, said stirrup device removably mounted on abutting cooperating bent edges of adjacent members so that one of said channels of the stirrup device partially surrounds both of said abutting bent edges, and at least one arcuate shaped spring clip positioned in the other channel and adjustably engaging one angled portion of said other channel of the stirrup device and the bent abutting edge of at least one of said members, so as to apply a biasing force between the stirrup device and those portions of said members located in one of said channels, whereby the members are maintained in secure assembled relationship to one another.

2. A joining stirrup device as in claim 1 wherein the stirrup device comprises angled portions forming three

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channels, including a center channel and two lateral end channels, one of said arcuate shaped spring clips positioned in a lateral end channel and engaging an angled portion of said stirrup device and a portion of at least one sheet metal member mounted in assembled position within an adjacent channel.

3. A joining stirrup device as in claim 2 wherein two sheet metal members are arranged in substantially the same plane and further comprising a third sheet metal member arranged substantially perpendicular to the plane of the two members, the third member positioned between one of said clips and an angled portion of one of said lateral channels and thereby being maintained in secure assembled position within a lateral end channel by means of one of said clips.

4. A joining stirrup device as defined in claim 2 wherein two sheet metal members are assembled substantially perpendicular to each other, with an angled portion of one lateral end channel being secured to the bent edge of one of said members, said clip located in said other lateral end channel and biasingly engaging a portion of one of the sheet members, wherein said stirrup device is securely fastened to the other sheet member.

5. A joining stirrup device as a claim 2 wherein two sheet metal members are assembled substantially perpendicular to each other and further comprising two arcuate

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shaped spring clips each mounted in one lateral end channel of said stirrup device and each arranged to biasingly engage a portion of a sheet member so as to maintain them in assembled abutting position.

6. A joining stirrup device as in claim 1 wherein two sheet metal members are assembled in substantially the same plane, the stirrup device comprises two channels, the biasing means comprises a single, flexible clip, said clip positioned in one of said channels and biasingly engaging a portion of one sheet member, whereby the bent edge of both sheet members are positioned in the same channel in assembled abutting relation to one another.

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EDWARD C. ALLEN, Primary Examiner